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## REVIEWS OF NEW BOOKS.

*The History of the Western Empire; from its Restoration by Charlemagne to the Accession of Charles V.* By Sir Robert Comyn. 2 vols. 8vo. London, Allen and Co.; Wright.

THE separation of this subject from the admixture of general history, and making a complete digest of it *per se*, merits our hearty approbation as an useful and excellent design. Would that the same were done with Asia Minor, now receiving such interesting illustration from the research of English travellers, like Mr. Fellows and Mr. Hamilton! We have not now, however, to wish for something to be done; we have to bestow our attention upon what has been very ably accomplished by Sir R. Comyn. This History of the Western Empire has fulfilled a desideratum in our literature. It is very concisely but very sufficiently executed. There is research enough; and we are not overlaid with opinions or theories. It resembles the good old annalists, with modern improvements. Facts are sought from every quarter, and well weighed, without an attempt to bend them to some prejudiced feeling or preconceived notion. In short, the history is a genuine sterling history, and exceedingly unlike the majority of contemporary publications.

Pere Daniel, Muratori, Giannone (we name them without regard to date or order), Vertot, Bayle, Pfeffel, Struvius, Ohbon, Bonamy, Dupin, Schmidt, Hume, Heiss, De Comines, the Villani, Sismondi, Planta, Pignotti, Froissart, Machiavelli, Raumer, Coxo, Hallam, Michael, Daru, Guicciardini, Bower, Platina, Anquetil, Mosheim, Tiraboschi, Rapin, Sharon Turner, Paulus Jovius, De Thou, Mariana, Brantome, Denina, Knolles, Laugier, and a host of other authorities, are cited at every page; an excellent general index, and elaborate genealogical tables, add to the historical accuracy and value of the work.

Such are its characteristics; and our readers will only farther require from us selected examples of the style and manner in which its prominent parts are treated. These are readily found, and upon points of much interest: but we must first quote the author's own just summary of his performance.

"I have now (he says) endeavoured to relate the chief events which occurred in Germany and Italy during a period of more than seven centuries, for the greater portion of which a cloud of darkness overshadowed Europe. But before the time to which we have advanced, the dense mist had been gradually dispelled, and the rays of returning light were pouring forth with astonishing splendour. The slow advances of learning had become suddenly stimulated by the invention of printing in the middle of the fifteenth century. The arts, which had been painfully struggling with all the discouragement of a dark and uncivilised age, were gladdened by the voice of patronage. In Italy, painting had already attained a pitch of excellence never since surpassed: and the proudest of her architectural monuments were soon to be eclipsed by the stupendous fabric of St. Peter's. But not to Italy was the burst of light confined: Nature seemed prodigal in the production of genius in every

nation. England and Spain were ready to produce their imperishable glories of literature; and the sixteenth century could boast of Ariosto and Tasso, of Shakspeare and Spenser, of Cervantes and Lope. Science was at the same time destined to unlock her treasures to the world, which had been closed to the penetrating eyes of ancient Greece. By the aid of Copernicus, Tycho, Galileo, and Kepler, the wonders of the starry firmament were displayed in their true beauty; and before the close of the century, Bacon had given earnest of his transcendent mind. And now the period had arrived when the annals of the Western Empire were to become, in great measure, the history of Europe. Instead of contracting their energies within their natural limits, or being content with harassing their immediate neighbours, the states began to mingle in a general struggle. A new system of policy sprang forth; and the views of the statesman were turned to that balance of power, by which the European nations reciprocally sought to restrain the encroachments of one another. The ancient mode of warfare had grown obsolete by the invention of gunpowder; and entirely new principles were introduced in the science of defence and destruction. Upon a field so boundless, I have neither power nor inclination to enter; and having led the reader through the gloom of the dark ages, I cheerfully consign him to those shining lights which have illuminated the later annals of the empire."

With reference to specimens, we shall be content with two; and begin with a distinct view of the progress of literature in the dark times, and especially as related to the progressive civilisation of Germany.

"Of all the great European nations, Germany made the slowest advances in the paths of literature and science. In the disastrous confusion which followed the death of Charlemagne, the few Germans who could pretend to learning were neglected and forgotten; and when a new stimulus was given to application, the course of study ran through a barren and unprofitable field. Schools, indeed, were to be found in the tenth and eleventh centuries at Paderborn, Bamberg, Wurtzburg, and Liege; in the cloisters of the first cathedral, Horace, the great Virgil, Sallust, and Statius, were known and respected; and a nun of Gandersheim excited astonishment by her familiar acquaintance with Terence and the composition of some sacred dramas after the model of his comedies. Even the Greek was not wholly unknown; and Archbishop Bruno, brother of Otho I., was celebrated for his proficiency in that language. But though amid the silence of monastic seclusion these agreeable and meritorious pursuits might be indulged in, the greater number of those who pretended to learning wasted their energies in less profitable occupation. The German students betook themselves to the universities of Paris or Bologna, where their understandings were bewildered in theological controversies, or encumbered with the Physics of Aristotle and the Edicts of Justinian. Though the seven liberal arts were professedly the objects of admiration, the niceties

of grammar and the subtleties of the dialectics engrossed the most exclusive devotion. The simplest phenomena of nature were uncomprehended or unexplained; and an advance in geometry or astronomy was imputed to magic. During the expedition of Otho I. into Calabria, an eclipse of the sun raised an universal belief that the day of judgment had arrived; and the German warriors sought to elude the terrors of that stupendous event by creeping beneath the baggage and carriages, or secreting themselves in their empty wine-casks! This deplorable state of ignorance was little bettered during the thirteenth and fourteenth centuries; but before the commencement of the fifteenth, the empire could boast of the universities of Prague, Vienna, Heidelberg, and Cologne; and the student was no longer driven to Paris or Bologna. Still, however, in Germany the endless wranglings of school-divinity, and the absurd refinements of logic, were mistaken for the perfection of ingenuity and science; whilst the cultivation of the ancients and general literature was pronounced a frivolous and useless pursuit. At length the lustre of Italian refinement diffused itself over the Alps, and brightened the German atmosphere; and the example of Agricola and Reuchlin turned the stream of application in a more pleasing and salutary direction. During the darker period the German language was little cultivated; and the works of the most conspicuous merit, as the histories of Witkind and Otho of Freisingen, were veiled in the Latin idiom. The compositions in the native tongue were scarcely more than translations from other languages, or barbarous attempts at rhyme. The reputation of the Troubadours penetrated the woods of Germany; and during the crusades a taste was imbibed for the wonders of chivalry and romance. But the love-songs of the minstrels died away with the holy wars; and the people were contented with short and simple ballads, which could be retained with ease, and were therefore more acceptable than long and elaborate poems. Even these were thrown into the shade by the increasing fondness for mines and buffoons, who wandered about the country, delighting nobles and people with their recitations and antics. The dramatic effect of their contentions in their art acquired for them the greatest popularity; and whilst the law denounced them as infamous, the princes encouraged them at their courts. At length the diet interposed to stem this inundation of absurdity; the multitude were deprived of their favourite diversion; and the privilege of entertaining fools and mummers was reserved for the electors and princes. A severe drawback to the exertions of the learned was the great deficiency of books, although the monks were assiduous in multiplying copies. How scanty were libraries at the beginning of the fifteenth century, may be seen from the collection of Lewis III. elector palatine, bequeathed in 1421 to the university of Heidelberg. This consisted of no more than one hundred and fifty-two manuscript volumes; eighty-nine theological, seven on the canon and five on the civil law, forty-five on medicine, and six on astronomy and philosophy. But in a few years after this bequest, the Ger-

mans obtained the proud distinction of that great discovery, the composition of movable types; and in spite of the pretensions of other nations, Germany has the strongest right to claim the invention of printing. To herself, however, the invention proved at first less beneficial than to other countries; for she was as yet unskilled in the manufacture of paper; and the Italian press, seizing upon her new discovery, left her parent-efforts at an immeasurable distance. But however deficient in literature and science, Germany attained early proficiency in the mechanical, and even the finer arts. As early as the tenth century architecture engrossed her attention; and her old wooden churches were replaced by others of stone, with roofs of tile, and floors decorated with mosaic. In the next age arose the cathedral of Strasburg; and the stately cathedral of Cologne was founded by the archbishop in 1218. The sacred edifices were further adorned by attempts at carving in marble the effigies of emperors and bishops. Some advance, also, was made towards excellence in painting; the monks delighted to beautify their manuscripts by elaborate and brilliant miniatures; and if we may trust the taste of Luitprand, bishop of Cremona, the hall of Merseburg contained a lively and animated representation of a victory by Henry I. over the Hungarians. The discovery of the Hartz-mines under Otho I. opened a new field to the ingenuity of the German artists in forging and casting metals; and the churches were enriched by altars and images of gold and silver. In the less elegant arts, Germany was more successful,—the natural result of her widely extended trade. Her looms produced excellent linen and woollen cloths; and in many other departments her workmen and manufactures were eagerly sought by the rest of Europe. To this imperfect sketch of the institutions of Germany, a few words may be added on the general character of the Germans, and their habits as members of society. The grand features in the lives of the men were their devotion to war and hunting, and their inordinate addiction to drunkenness. To the two first pursuits the German noble was trained almost from his cradle. Taught to excel in horsemanship and the use of arms, he ripened into manhood amidst the contests which called on him to defend his country, or invited him to the luxury of private war; and if not engaged in these tumultuous pleasures, the lists of the tournament stood ready for the display of his valour and dexterity. The extensive forests opened to him a kindred gratification; and in the pursuit and destruction of the wild beasts he experienced a rapturous excitement little short of that produced by contest with his fellow-men. Nor were these violent delights confined to the layman. The priest forgot his peaceful calling, and issued into the field as a warrior or a hunter. By a strange inconsistency indeed, the pleasures of hawks and hounds were frequently forbidden to the clergy, although it remained a part of their feudal duty to sally forth at the call of their lord in a more murderous avocation. By the crafty Greeks and temperate Italians, the single-hearted Germans were continually reproached with their proneness to intoxication, which inflamed their natural rudeness to insanity, and converted their convivial meetings into scenes of strife and bloodshed. That the reproach was far from unmerited cannot be denied; but the vice was of ancient growth in Germany; the hearts of the people were open to hospitality and social feelings; and the Rhine in the eleventh century already yielded those delicious wines which

their more barbarous ancestors could only hope for by visiting France or Italy. Their disgraceful excesses were in character with the rugged manners of the Germans, who, unchecked by the beneficial influence of female society, abandoned themselves to the vehemence of their passions, without a tincture of shame for their irrational enjoyments. The nobles, indeed, set an example of rudeness and ferocity, and delighted in the designation of the lion, the bear, or other beasts of prey. A single anecdote may expose the refinement of the eleventh century. After the death of Otho III., Eckard marquis of Misnia, Bernard duke of Saxony, and Arnolph bishop of Halberstadt, by chance entered a hall at Werl, where a repast was spread for the sisters of the deceased emperor. The three noble intruders unceremoniously seated themselves at the table; and having devoured all the viands, went their way, leaving the imperial mourners in the utmost confusion. The private lives of the Germans partook of extreme simplicity. The women busied themselves with their looms and distaffs, and ladies of the highest rank did not disdain this primitive occupation. Even the most exalted princes affected no extraordinary state, except upon solemn occasions. We have already seen the unusual pomp which accompanied the princes in their attendance at the diet; and in their own mansions, the court-day of the nobles, and the celebration of a marriage or other domestic festival, called forth every known species of luxury and splendour. Innumerable guests were bidden to the banquets; and if the limits of the house were too narrow for the visitors, the tables were spread, and the dances performed, under the open canopy of the sky. On these occasions, men and women displayed the most costly attire, adorned with gold and jewels; and the most magnificent costumes of foreign nations were called in aid of the pageant. In the cities also a spirit of comfort and luxury began to prevail. The houses of the substantial burghers were indicative of increasing riches. Their tables were furnished with cups and vessels of silver; and their wives and daughters were decorated with ornaments of gold. In the churches, the splendour of the shrines, the gorgeous vestments of the priests, and the relics made really precious by the aid of pearls and gold, struck amazement into the stranger; and Italy herself might give way to Germany in the magnificence of her sacred decorations."

Our concluding extract shall be of the election to the triple mitre, and character, of the infamous Pope Alexander VI. Of him and his period Sir Robert Comyn writes:—

"From the tomb of Lorenzo we may hurry past that of Innocent VIII., who survived only a few weeks. His character, if adorned with no brilliant qualities, is unstained by any enormous vice; and the death of the feeble old man must be regarded as a public calamity, since it admitted to the throne one of the most detestable of the human race. On the 11th of August, Cardinal Rodrigo Borgia, chancellor of the Church of Rome, was declared to be the new pontiff, having triumphed over his opponent, Giuliano della Rovere, cardinal of St. Peter *ad vincula*. Borgia was a native of Valencia in Spain, the son of Geoffrey Lengol and Isabella Borgia, sister of Calixtus III. He assumed the title of Alexander VI., was crowned with more than usual splendour, and received the acknowledgments of the principal Christian princes. The well-known vehemence of his temper struck terror into his enemies; and Cardinal Giuliano deemed it prudent to retire to Ostia, and afterwards into France. Nothing

can more plainly demonstrate the corruption of the sacred college than the choice of such a man as Borgia. Though a priest and cardinal, he openly cohabited with Vanozia, a celebrated courtesan; and four children, the offspring of his illicit love, were eagerly promoted in the outset of his reign. For Juan, the eldest, he obtained the duchy of Gandia in Spain; Caesar, the second, he created cardinal; his daughter, Lucretia, he gave in marriage to Giovanni Sforza, lord of Pesaro; and for Geoffrey, his youngest son, he demanded the hand of Sancia, natural daughter of Alfonso, duke of Calabria. But the court of Naples for a time declined this alliance; and the disappointed pope harboured the bitterest resentment. The crooked policy of Lodovico Sforza speedily held forth to him the prospect of gratifying his vengeance. Though Lodovico had with some plausibility assumed the reins during the minority of his nephew, the mature age of Gian-Galeazzo now deprived him of an excuse for retaining the dual authority. In vain did the prince demand his rights; and his young duchess, Isabella of Naples, daughter of Alfonso, anxiously implored her father and King Ferdinand to wrest the government from the hands of the usurper. But though desirous of assisting his son-in-law, Alfonso had hitherto seen the prudence of avoiding a rupture with Lodovico, and stood too much in awe of the power and rapacity of Venice to dissolve the league set on foot by Lorenzo between Florence, Naples, and Milan. After the death of Lorenzo, the good understanding he had so carefully maintained with Lodovico was endangered by the indiscretion of his son Piero, who succeeded to his authority in Florence, and appeared entirely devoted to the Neapolitan princes. Sforza well perceived his danger in this coalition, and accordingly changed his policy, by entering into a league with Venice and the pope, the avowed enemies of Ferdinand. As the further means of shielding himself from his adversaries, he resolved to strike a blow upon Naples itself, by once more reviving the claims of the house of Anjou, and inciting Charles VIII. king of France to enforce his rights by immediate invasion of the kingdom. Such was the political state of Italy at the close of the fifteenth century. The mild and prudent counsels of Lorenzo were withdrawn, and the dark and intriguing spirits of Borgia and Sforza were brought into collision. The peace so happily restored was irreparably broken; and the country was henceforward laid open to a series of foreign incursions, which involved the Italians in innumerable distresses. Torn as the unhappy land had been by the tumultuous excesses of her own sons, she had hitherto escaped a foreign yoke; and though the armies of Germany and France had occasionally molested her territories, the intruders had been unable to accomplish a permanent footing. At the moment when the gathering storm was ready to burst upon her, Italy had attained the highest degree of prosperity. The country, portioned out among the several states, presented a healthy and improving aspect. Agriculture formed the employment of great part of the inhabitants; nor was this occupation confined to the rustics alone. Every city possessed an ample tract of lands, which were cultivated by the citizens, who in time of peace issued from the gates to their daily labour, and returned again with the evening to the security of their walls. A larger portion of citizens were diligently engaged in the lucrative pursuits of trade and commerce, the profitable business of exchange with distant countries, and the hazardous ne-

negotiation of foreign loans. The Italian manufactures were in request in the East as well as in Europe. The brilliant glass and splendid mirrors of Venice, the glossy silks of Bologna and Modena, the gold and silver tissues and rich cloths of Florence, found a market in every civilised country; and the galleys of Italy returned laden with the produce and treasure of Arabia and India. In the fine arts, Italy had far outstripped her neighbours. The increase of population swelled the limits of a narrow town into an extensive and beautiful city; the mean and lowly hut was expanded into a commodious habitation; and architecture, no longer confined to the service of religion, was employed on the stately palaces of private individuals. The massive fabrics of Venice had begun to rear their heads as early as the tenth century; the noble Duomo of Pisa was commenced almost as early; in the fifteenth century, the labours of Brunelleschi were engaged in adorning his native Florence; and Bramante had already distinguished himself by his versatile powers. Painting was rapidly advancing to perfection; sculpture once more displayed her beautiful forms; and the mighty genius now burst forth, which, after raising the stupendous cathedral, could dye its walls with matchless designs, and adorn its shrines with magnificent statues. In letters, this favoured country stood also pre-eminent."

But we must leave the detailed conclusion of this vivid sketch to readers; to whom, and to every collection of standard books, we heartily commend Sir Robert Comyn's labours.

DR. ROBINSON'S RESEARCHES IN PALESTINE.  
[Second Review.]

At Akabah the travellers had a long negotiation about their conveyance and Arab escort; and we are told,—

"After long and grave discussion, the result was, that the intermediate sum of one hundred and thirty-five piastres was agreed to by both parties. In the place of the dead camel, one of Tuweileb's was to carry a load; and we undertook to furnish provisions for the men upon the way. This was no great matter; for their wants are few, and their palates not difficult. Bread and rice are luxuries which they seldom enjoy; and of these we had an ample supply. The commissary in the castle had also a few stores for sale, at enormous prices; but we bought little, except a supply of lentiles, or small beans, which are common in Egypt and Syria under the name of *'adas*; the same from which the pottage was made for which Esau sold his birthright. We found them very palatable, and could well conceive that to a weary hunter, faint with hunger, they might be quite a dainty."

The learned doctor does not inform us how he came to know that these *'adas* were the very same beans of which Esau bought so dear a mess!—Of the Arabs there are some remarkable traits.

"We made many inquiries in the peninsula, and among the tribes which we fell in with further north, but could never hear of a Bedawy among them all who was able to read. Even Sheikh Sâlih, the head sheikh of all the Tâwarah, has not this power; and whenever a letter is addressed to him, or an order from the government, he is obliged to apply to the content to have it read. Among the Tâwarah this ignorance seems rather to be the result of habit and want of opportunity; but among the tribes of the northern deserts we found it was accounted disreputable for a Bedawy to learn to

read. They rejoice in the wild liberty of their deserts, as contrasted with towns and cities; and, in like manner, take pride in their freedom from the arts and restraints of civilised life. The Muhammedanism of all these sons of the desert sits very loosely upon them. They bear the name of followers of the false prophet; and the few religious ideas which they possess are moulded after his precepts. Their nominal religion is a matter of habit, of inheritance, of national prescription; but they seemed to manifest little attachment to it in itself, and live in the habitual neglect of most of its external forms. We never saw any among them repeat the usual Muhammedan prayers, in which other Muslims are commonly so punctual; and were told, indeed, that many never attempt it, and that very few among them even know the proper words and forms of prayer. The men generally observe the fast of Ramadan, though some do not; nor do the females keep it. Nor is the duty of pilgrimage more regarded; for, according to Tuweileb, not more than two or three of all the Tâwarah had ever made the journey to Mecca. The profaneness of the Bedawin is excessive, and almost incredible. 'Their mouth is full of cursing;' and we were hardly able to obtain from them a single answer that did not contain an oath. \* \* \*

"During the preceding year Tuweileb had spent a fortnight in and near the great plain el-Kâ'a, not far from Mount Sertâl, pasturing his camels, without a drop of water for himself or them. He drank the milk of the camels; and they, as well as sheep and goats, when they have fresh pasture, need no water. In such case they will sometimes go for three or four months without it. Others had told us, that the camel needs water once in every three days in summer, and every five days in winter; but this is probably when the pastures are dry, or when they are fed on provender."

From Akabah the route was to Jerusalem, Hebron, and other memorable scriptural sites; and to Jerusalem itself more than a third of the work is devoted. The plans and maps are of the most accurate kind, and, together with the exact surveys, must ever be of great value to biblical literature. At the Holy City we are informed,—

"In the houses of our friends we found collected all the members of the Syrian mission, with a single exception, from the stations at Beirut in Cyprus, and one also from the mission at Constantinople. They had come up with their families, like the Hebrews of old, at the time of the passover, to worship in this place, and to consult together on the best measures for promoting the great work in which they were engaged. Among the eight missionaries thus assembled, it was with feelings of no ordinary gratification that I could welcome five as former friends and pupils. In those days of former intercourse, we had never thought thus to see each other on earth upon Mount Zion; and so much the more deeply did we all now feel and prize the high privilege of meeting in this sacred spot, where we might again take sweet counsel together, and walk unto the house of God in company."

And we have quoted this passage chiefly for the purpose of remarking on the zeal and perseverance of the American missionaries in these regions, where they are doing more than the subjects of any other nation.\* Even among the rude Turcomans they have sped their way; and are indeed *par excellence* entitled to the

\* See the interesting communication on the subject in our last No., for which we were indebted to the best living authority.—*Ed. Lit. Gaz.*

praise of being explorers of the East. But to return to Dr. Robinson and his opinions upon the diffusion of darkness, to which we have already alluded when citing his preface, he takes up the theme of tradition at Jerusalem, and says,—

"I must request the reader to bear in mind, that for the lapse of more than fifteen centuries Jerusalem has been the abode not only of mistaken piety, but also of credulous superstition, not unmingled with pious fraud. During the second and third centuries after the Christian era the city remained under heathen sway, and the Christian Church existed there, if at all, only by sufferance. But when, in the beginning of the fourth century, Christianity became triumphant in the person of Constantine; and at his instigation, aided by the presence and zeal of his mother Helena, the first great attempt was made, in A.D. 326, to fix and beautify the places connected with the crucifixion and resurrection of the Saviour; it then, almost as a matter of course, became a passion among the multitudes of priests and monks, who afterwards resorted to the Holy City, to trace out and assign the site of every event, however trivial or legendary, which could be brought into connexion with the Scriptures, or with pious tradition. The fourth century appears to have been particularly fruitful in the fixing of these localities, and in the dressing out of the traditions, or rather legends, which were attached to them.\* But the invention of succeeding ages continued to build upon these foundations;† until, in the seventh century, the Muhammedan conquest and subsequent oppressions confined the attention of the Church more exclusively to the circumstances of her present distress, and drew off, in part, the minds of the clergy and monks from the contemplation and embellishment of scriptural history. Thus the fabric of tradition was left to become fixed and stationary as to its main points, in much the same condition, indeed, in which it has come down to our day. The more fervid zeal of the ages of the crusades only filled out and completed the fabric in minor particulars.‡ It must be further borne in mind, that as these localities were assigned, and the traditions respecting them for the most part brought forward, by a credulous and unenlightened zeal, well meant indeed, but not uninterested,—so all the reports and accounts we have of the Holy City, and its sacred places, have come to us from the same impure source. The fathers of the Church in Palestine, and their imitators the monks, were themselves, for the most part, not natives of the country. They

\* "The *Itinerarium Hierosol.*, A.D. 333, mentions the palm-tree as still standing on the side of Mount Olivet, from which the people broke off branches to strew before Jesus. Cyril also speaks of it in the same century (*Cal. x. 19*). The column to which Christ was bound and scourged was already found; but the blood upon it is first mentioned by Jerome, nearly a century afterwards. The *Cenaculum* connected with it was the work of a still later age, as we have already had occasion to remark."

† "Thus the traditions respecting the house of Calaphas, Gethsemane, and various other sites, although slight traces of them are found quite early, appear to have been decked out with new circumstances as centuries rolled on. In A.D. 870, the monk Bernard speaks of a church on the side of the Mount of Olives, on the spot where the Pharisees brought to Jesus the woman taken in adultery. In the church was preserved a marble tablet, with the writing which our Lord there wrote upon the ground!—*Itinerar. 13, in Acta Sanctor. Ord. Benedict.* sec. III. pars II. p. 525."

‡ "A multitude of the minor legends—such as those relating to the place where Peter's cock crew, the houses of the rich man and Lazarus, and the like—were probably the work of more modern times. Even the *Vindicta dolorosa* seems to have been first got up during or after the times of the crusades."



knew in general little of its topography; and were unacquainted with the Aramæan, the vernacular language of the common people.\* They have related only what was transmitted to them by their predecessors, also foreigners; or have given opinions of their own, adopted without critical inquiry, and usually without much knowledge. The visitors of the Holy Land in the earlier centuries, as well as the crusaders, all went thither in the character of pilgrims, and looked upon Jerusalem and its environs, and upon the land, only through the medium of the traditions of the Church. And since the time of the crusades, from the fourteenth century onwards to the present day, all travellers, whether pilgrims or visitors, have usually taken up their abode in Jerusalem in the convents; and have beheld the city only through the eyes of their monastic entertainers. European visitors in particular have ever lodged, and still lodge, almost exclusively in the Latin convent; and the Latin monks have in general been their sole guides. In this way, and from all these causes, there has been grafted upon Jerusalem and the Holy Land a vast mass of tradition, foreign in its source, and doubtful in its character, which has flourished luxuriantly, and spread itself out widely over the western world. Palestine, the Holy City, and its sacred places, have been again and again portrayed according to the topography of the monks, and according to them alone. Whether travellers were Catholics or Protestants has made little difference. All have drawn their information from the great storehouse of the convents; and, with few exceptions, all report it apparently with like faith, though with various fidelity. In looking through the long series of descriptions, which have been given of Jerusalem by the many travellers since the fourteenth century, it is curious to observe how very slightly the accounts differ in their topographical and traditional details. There are, indeed, occasional discrepancies in minor points, though very few of the travellers have ventured to depart from the general authority of their monastic guides. Or even if they sometimes venture to call in question the value of this whole mass of tradition, yet they nevertheless repeat in like manner the stories of the convents; or at least give nothing better in their place. Whoever has had occasion to look into these matters for himself will not be slow to admit that the views here expressed are in no degree overcharged. It follows from them,—and this is the point to which I would particularly direct the reader's attention,—that all ecclesiastical tradition respecting the ancient places in and around Jerusalem and throughout Palestine is of no value, except so far as it is supported by circumstances known to us from the Scriptures, or from other contemporary testimony."

And he adds—

The preceding remarks apply more particularly to Jerusalem, and to those parts of Palestine with which the fathers of the Church and the hosts of monks have chiefly occupied themselves. But there is in Palestine another kind of tradition with which the monasteries have had nothing to do, and of which they

have apparently in every age known little or nothing;—I mean, the preservation of the ancient names of places among the common people. This is a truly national and native tradition, not derived in any degree from the influence of foreign convents or masters, but drawn in by the peasant with his mother's milk, and deeply seated in the genius of the Semitic languages. The Hebrew names of places continued current in their Aramæan form long after the times of the New Testament, and maintained themselves in the mouths of the common people, in spite of the efforts made by Greeks and Romans to supplant them by others derived from their own tongues. After the Mohammedan conquest, when the Aramæan language gradually gave place to the kindred Arabic, the proper names of places, which the Greeks could never bend to their orthography, found here a ready entrance; and have thus lived on upon the lips of the Arabs, whether Christian or Muslim, townsmen or Bedawin, even unto our own day, almost in the same form in which they have also been transmitted to us in the Hebrew Scriptures."

Upon these statements and principles we shall abstain from offering any observation, but leave them to the pious and the learned, as eminently meriting their attention.

The historical account of Jerusalem is ably put together; and all that relates to the legends and traditions which disfigure it, together with the fables of pilgrims and crusaders, will be read with a serious pleasure. We must, however, reserve a few columns for our next *Lit. Gaz.*

#### MISCELLANEOUS.

*Moore's Poetical Works.* Vol. X. Longman and Co.

This volume, containing the *Epicurean*, completes this very neat and complete edition of Moore's *Poetical Works*. The author's account of his first conception of the subject for a poem, and subsequent change into a prose tale (of highly poetical imaginings and colouring), is a pleasant anecdote of literature. A knowledge of what popular writers blot would be almost equal in interest to a knowledge of what they retain; and some of Moore's revelations in this respect have given much value to this copy of his productions. Taking it altogether, neatness of form, illustrations, corrections, and novel statements, we should think that its place on many a tasteful shelf would amply reward the design of publishing it in so eligible a manner.

*On the Chemical Rays accompanying Solar and Electrical Light.* By M. Becquerel. (Bibliothèque Universelle de Genève, No. 66.)

So much attention is given to photography, and to the curious and varied results disclosed by the progress of experiments therein, that we would wish to transfer to our pages M. Becquerel's memoir complete. But we have numerous other than scientific readers, and must not therefore deprive them of their fair proportion of the *Gazette*, of which, of late, they have been unavoidably somewhat curtailed. For this reason, then, we translate only the conclusions drawn by M. Becquerel.

"1. The chemical rays which accompany solar light, and which act on the salts of silver, consist of at least two orders of rays, first, of the ordinary chemical rays, which I have named the excitators; and, secondly, of rays, which I have termed the continuators, and which only continue an action commenced by the first.

2. These latter, by their refrangibility, occupy the higher portion of the solar spectrum;

that is to say, they accompany the red, orange, yellow, and green rays, and, perhaps, also the least refrangible of the blue; but in this latter case they are mixed up with the excitators.

3. Coloured screens: some allow only the continuators to pass, others both orders of rays.

4. The second order of rays also continues the action commenced by the chemical agent of electrical light; and may be of use in the examination and analysis of the chemical action of this latter agent."

*Smith's Standard Library.* (Wm. Smith.) *Pope's Poetical Works*, in double columns and 200 pages, and the price only 5s. If cheapness deserve popularity, surely this does.

*Bryant's Poems.*—An edition of one of the most pleasing of the American poets, in similar form, and at the cost of a shilling.

*Voltaire's Life of Charles XII.*—A new edition, and equally cheap.

*Picciotti, from the French of Saintine*, is a very acceptable addition to these cheap publications: it is a sweet tale, and our fair novel-readers will thank us for directing their eyes to it.

#### ORIGINAL CORRESPONDENCE.

##### FOSSIL REPTILES.

To the Editor of the *Literary Gazette*.

Crescent Lodge, Clapham Common, August 18, 1841.

SIR,—I have perused with much pleasure your admirable report of the masterly and important memoir "On the Fossil Reptiles of England," by Professor Owen. By its early publication you have conferred a great benefit; for the public are thus put in possession of a condensed view of the principal results of the author's laborious and successful investigations. But while expressing my admiration of the report, I beg permission to comment on a few statements which are not quite correct, and which, from my personal knowledge of the liberal and honourable conduct of the highly gifted author towards his predecessors in the field of research, in which he has acquired such deserved reputation, I am persuaded have originated from inadvertence, or misapprehension of the reporter.

*Iguanodon* (*Lit. Gaz.* p. 517, col. 2).—In my first memoir (*Philos. Trans.* 1825), it was distinctly stated, that the name proposed for the reptile whose teeth were described, referred only to the general resemblance in *external form* of the fossil teeth with those of the iguana; and it should be remembered, that sixteen years ago the optician and the lapidary had not bestowed upon the palæontologist the power of examining the internal structure of fossil teeth. The name was sanctioned by Baron Cuvier; and certainly is quite as appropriate as *Dendrodon*, *Labyrinthodon*, and other generic terms of recent invention. The plano-concave vertebra, the peculiar character of the femur, and of the other bones of the extremities, have been figured and described in my works. The compressed unequal phalanx was first referred by M. Cuvier to the *iguanodon*, and adopted by me. Subsequent discoveries may have proved the inaccuracy of the supposition; but unless unequal bones have been found in connexion with the phalangeals of the fore foot, the close resemblance between the fossil claw-bone and that of the iguana would incline me to maintain the former opinion.

*Supposed teeth of the Hyloesaurus* (*Literary Gazette*, p. 517, col. 3).—The report correctly states, that in the geology of the S. E. of England (1833), some teeth discovered by me in Tilgate Forest, twenty years since, are referred to the *phylosaurus* of Dr. Jager, on the authority of M. Boué; but that Professor Owen be-

\* "Though the Greek language was understood and spoken by the inhabitants in general, yet there is reason to believe that the real mother-tongue of the common people was still the Aramæan. Origen and Jerome appear to have been the only fathers in Palestine who understood Hebrew. The latter, who died in Palestine A.D. 420, made it a particular study, in order to translate the Bible. He mentions the Punic dialect,—by which he probably means the Phœnician—as a spoken language."

lives them to belong to the *hylaosaurus*. Now, in common fairness, it should also have been mentioned, as Mr. Owen has done in his own splendid work (*Odontography*, Part II.), that the first reference of the teeth in question to the *hylaosaurus* was made by me four years ago; as the following quotation proves: "The teeth of the *hylaosaurus* are unknown; but with the bones of that reptile I have found teeth of a very peculiar form, and which are entirely distinct from those of the *megalosaurus*, *iguodon*, *crocodiles*, and *plesiosaurus*, whose remains occur in the Tilgate strata" (*Wonders of Geology*, vol. i. p. 493).

*Fossil Turtle from the chalk* (Lit. Gaz. p. 518).—In the report it is stated, that "this marine turtle has been described as a species of *emys* by Dr. Mantell, in whose possession it now is;" but it should also have been mentioned, that both Professor Owen and Mr. Bell had declared its affinity to the fresh-water turtles; and that in my paper on this beautiful fossil (see the Proceedings of the Royal Society), it is distinctly asserted that, although, in conformity with the opinions of those eminent naturalists, I had referred the fossil to the *Emydidæ*, yet there were characters which shewed its relation to the marine turtles; and those peculiarities are distinctly pointed out, as will be seen when the memoir is published in the Philosophical Transactions.

In conclusion, I beg most distinctly to disclaim any intention of attributing unfairness either to the writer of the abstract in the Lit. Gaz. or to the illustrious palaeontologist whose courtesy and liberality I have so often experienced, and who has noticed my humble labours in terms sufficiently flattering to satisfy one far more solicitous of honourable mention than,

Sir, your very obedient servant,  
GIDEON ALGERNON MANTELL.

## ARTS AND SCIENCES.

### BRITISH ASSOCIATION.

[Fifth notice. Conclusion.]

The sectional proceedings of Tuesday did not offer much of novelty or interest, at least as far as regarded the list and order of business set down in the morning programme; and we felt that on this occasion we might very safely abridge our report even more than usually, without injustice to the meeting, or baulking the public of any real information. It will occur to readers, that many topics familiar to the public bodies of the metropolis must be introduced into these provincial assemblages; and that even matters notorious by patent cannot be excluded from the circle of communications, though they ought certainly to be more carefully circumscribed as regards the occupation of time. But the Tuesday, the last day, was chiefly a sort of sweeping-up of whips and strays; with a few things worthy of attention, and a greater number only worthy of being noticed as belonging to the history of the meeting. We proceed, therefore, to complete our account of it, agreeable to the principles we have always laid down, of giving what was really worthy of record in the most succinct manner, and only dilating where the importance of the matter seemed to require it. Men are generally so full of the importance of their own inventions or discoveries, that they think they never can explain them enough; but when we have come to examine many of these ostrich-eggs, we have found that the shell of a wren's would hold all their yolk. But *verum sapientia*.

## TUESDAY.

### SECTION A.—Mathematics and Physics. Papers and Communications.

1. Sir J. W. F. Herschel's 'Report on Nomenclature of Stars.'
2. Sir J. W. F. Herschel's 'Report on Reduction of Meteorological Observations.'
3. Professor Lloyd's 'Simultaneous Magnetical Observations on the Term-Days of May and Aug. 1846.'
4. Mr. Bond's 'Magnetical Observations at New Cambridge.'
5. Prof. Hartman 'On Daltonism.'
6. Mr. Dent 'On the Preservation of Steel Chronometer Balance-Springs by the Electro-metallurgic Process.'
7. Prof. Christie 'On the Preservation of Magnetic Needles from Oxidation by the Electrotypic Process.'
8. Prof. Sylvester 'On the Relation of Sturm's 'Auxiliary Functions' to the Roots of an Algebraic Equation.'
9. Mr. Bursill 'On Barometric Instruments.'
10. Rev. Mr. Drury 'On Sea-Compasses.'
11. Mr. Dent 'On the Determination of the Difference of Longitude between Greenwich and Plymouth.'
12. Mr. Dent's 'Account of the Rate of the Glass Balance-Spring, and Balance in a Chronometer, since 1834.'
13. Sir David Brewster 'On Osier's Anemometer at Inverness.'
14. Sir David Brewster 'On the Hourly Observations at Inverness and Island of Uist.'
15. Prof. Whewell 'On Captain Hewitt's Observations of the Point of no Tide in the Middle of the German Ocean.'
16. Prof. Whewell's 'Account of Mr. Ross's Discussion of Tide-Observations at Leith.'
17. Prof. Moseley's Calculating Machine.
18. Mr. Fowler 'On a Calculating Machine.'
19. Mr. Bowman 'On Determining Distances by the Telescope.'
20. Mr. Grellet 'On an Instrument for Drawing Circles in Perspective.'

The foregoing long list of papers gave little promise of their being completed within the time set apart for sectional business. The subject-matter, however, was not altogether novel nor important in the sense to provoke discussion; the abstracts for the most part were short; and some of them even were merely submitted *pro forma*. The first two\* reported the progress made within the preceding year in the respective labours of the committees, and requested the renewal of the grants. Prof. Lloyd then submitted the results of simultaneous magnetical observations on the term-days of May and August 1846.

Mr. Bond's communication produced remarks from Mr. Snow Harris, M. Quetelet, Colonel Sabine, and Prof. Christie, relative to the disturbing causes producing oscillations in the needle, which, although causing no change in the mean point, were important to observe whenever they take place, in order to trace their source. The opinion appeared to be, that they had origin in local or meteorological causes, electrical state of the atmosphere, sudden fall of rain, &c. Mr. Snow Harris never should be satisfied until the needles to be observed were placed *in vacuo*: too much care, he was convinced, could not be taken to free them from the disturbances caused by the surrounding air.

Professor Hartman drew attention to several cases of that peculiarity, or rather deficiency in vision, which confused colours. Many persons there are who have not the power to discriminate in this respect. They see all things of one hue, or of two colours at most, or they can distinguish all colours but one, depending on the gradation of the affection, if it may be so termed. Dr. Dalton was peculiarly affected in this way; and hence Prof. Hartman proposed the term *Daltonism* for this peculiarity. Prof. Whewell stated, that this subject had been repeatedly before the Section; and years ago several very remarkable cases had been mentioned. He remembered when Dr. Dalton was invested with the scarlet robe of a D.D.

\* See Report of the last General Committee-meeting.

he called it green, and pink he thought sky-blue. Prof. Whewell objected to the term *Daltonism* or *Daltonian*; he did not like a name connected with defects. He ridiculed the idea of a *polychromate* or *bichromate Daltonian*; he infinitely preferred Sir J. Herschel's descriptive "idiot" for this peculiarity of vision.

Mr. Dent stated, that it was customary to, what is technically termed, "blue the balance-spring" in chronometers. He shewed from experiments, that this blue oxygenated surface (or coating) greatly increased the elastic force of the balance-springs, and that on its removal the balance-spring suffered nearly a corresponding loss of strength; that this rigid oxygenated coating, on its formation by heat, increased the strength of the spring more than the additional application of gold on its surface. And there was this further difference, that while this blue oxygenated surface might be considered as a first process of rust, the gold surface was a protection from the ill effects of damp and saline atmospheres, to which a chronometer is subjected on ship-board, and particularly in a tropical climate.

Mr. Dent applied the gold to the balance-spring of a chronometer, which had been previously rated; and on its being replaced after the addition of the gold, the rate of the chronometer was found to be a losing one of 41 seconds in 24 hours. This was caused by the removal of the blue oxygenated surface, and by the gold not compensating for the loss of elastic force consequent on its removal.

Professor Christie (No. 7) had similarly prepared magnetised needles, considering the gilding process to be a prevention of oxidation. In reply to a question as to the difference of weight before and after the gilding, he said the one he held in his hand weighed 225.4 grains previously to being submitted to the electrolytic process, and 227.8 after; giving a difference in addition of 2.4 grains.

Mr. Dent remarked, that the addition to the balance-spring was only 1-40th of a grain.

Professor Sylvester prefaced his remarks on the relation of Sturm's "auxiliary functions" to the roots of an algebraic equation, by explaining what functions are, and how obtained. The whole, however, belonged to a high order of mathematics.

The communication No. 9 was the subject of patents. Barometric instruments, however, are so valuable in relation to their perfection, that any approach thereto is worthy of note. The description of Mr. Bursill's barometers, and the stated defects of others, were as follow:—

A standard barometer to indicate the direct pressure of the atmosphere all over the globe, totally independent of change of temperature, has long been a desideratum; it being a well-known fact, that the mercury employed in the construction of barometers is liable to expand or contract about the one-hundredth part of its volume, by a change of temperature amounting to only 90° Fahrenheit: so that, even during the ordinary changes of the atmosphere, and still more particularly in the ascent or descent of mountains in tropical climates, a question immediately arises, as to how much of the rise or fall of the barometer should be attributed to increased heat or cold; and, although such question may, in fact, be solved by reference to the thermometer at the time of observation, it is only by the aid of a complicated formula—not easily understood, except by scientific persons—not easily retained by them, since the length of the barometrical column is perpetually varying from other causes besides temperature, and the difficulty of making an exact

computation thereby greatly increased. In addition to the defect already mentioned, it is an equally incontrovertible fact, that barometers generally are, as at present constructed, open to another source of inaccuracy, since the height of the mercurial column is frequently more or less than is apparent upon the graduated scale, owing to a change of level of the mercury within the cistern, and which change of level always accompanies any rise or fall of the barometer. It is true, that the latter evil can be lessened, in exact proportion as the size of the cistern is augmented; but such enlargement of the cistern, without altogether removing the evil, renders the barometer expensive, and far less portable; while a variety of different-sized cisterns gives rise to great discrepancy in the observations. In Bursill's patent standard-syphon, patent syphon-marine, and patent compensating-cistern barometers, these difficulties have been overcome, by arrangements equally novel and efficient,—and so simple, that the manner of using the barometer is at once intelligible to persons of ordinary capacity; while to those who have devoted much attention to this interesting subject, great satisfaction will, it is hoped, be derived, by an investigation of the principles upon which these valuable machines are constructed.

This hope expressed did not appear fully realised, on an inspection, by Dr. Robinson, Professor Stevelly, and others, of the instrument exhibited to the Section. Various questions were put and answered. But time and experience, we presume, can alone prove the acquisition of what has long been a desideratum, and stamp Mr. Bursill's as the standard barometer.

The Rev. Mr. Drury, on sea-compasses, went over the experiments; and described the efficiency, &c. of Dr. Scoresby's bar-magnets, made familiar to the public by publication, lectures last season at the United Service Institution, &c. &c.

Nothing new was elicited. Professor Christie observed, that the principle of the compound bar-magnet had been tried upwards of a hundred years ago. On behalf of a committee, of which he formed one, on the subject of the most efficient magnets as to power, permanency, &c., he detailed various experiments and trials conducted by that committee; and stated that every possible attention was being paid which the importance of the subject required, and on a scale commensurate with the naval character of the country. A long and desultory conversation ensued.

Mr. Dent communicated the result of his experiments on the glass balance-spring in chronometers, conducted since his first communication made to the British Association at Cambridge, in 1833, with observations on its official rate, resulting from five years' trial, by order of the Lords of the Admiralty. He also communicated the difference of meridian between Greenwich and Plymouth by chronometers.

Nos. 13 and 14, by Sir D. Brewster, were reports of progress.

No. 15. Captain Hewitt's observations, so far as the difficulty of noting the rise and fall of the tide in mid-sea would permit, confirmed Professor Whewell's theoretical point, of no tide in the middle of the German Ocean. The place of no fall nor rise of the waters was  $52^{\circ} 27' 30''$  N. lat. and  $3^{\circ} 14' 30''$  E. long.

Mr. Walker remarked that this was on the Dogger-Bank; and referred the existence of the bank to this cause.

Professor Moseley explained a diagram of

his calculating-machine for differential integrations. The invention was described, by Professor Lloyd, as an extremely beautiful and perfect contrivance.

Professor Whewell referred to and presented a table of tides projected by Mr. Ross, who had been long engaged on this subject jointly with Sir J. Lubbock and himself; and who had conducted his inquiries with zeal and intelligence, and had originated various valuable suggestions. Mr. Ross's tables gave the times as well as the heights of the tides. They differed materially from those of Professor Whewell and Sir J. Lubbock, appeared much simplified, and, as a mean, promised greater correctness than either. Professor Whewell pointed out the general agreement in form, at the same time commenting on the differences of the curves of correction, and on the change which he conceived must occur in the corrections of parallax and declination, differing in different years. Sir J. L.'s tables were theoretical, his own founded on observations at Plymouth, and Mr. Ross's on observations at Leith; and he was not disposed to allow that the same corrections were available for all places, although, as before stated, the form of each agreed. Mr. Ross was confident in the accuracy of his tables, the test of which, as of all, is observation of the tides. There is, however, a difficulty in this comparison, at least as hitherto conducted, to ascertain the agreement between prediction and observation, because it appeared, for the most part, the tables of prediction had been used for the records of observation.

Mr. Fowler's calculating-machine, it was observed, was ready for inspection at Devonport. It will be remembered that a notice of this machine was communicated at Glasgow by Professor Airy. The chief peculiarity of the machine is, that instead of the common decimal notation of numbers, a ternary notation is used; the digits becoming not tenfold, but threefold, more valuable as they were placed to the left: thus, 1 and 2 expressed one and two as in common, but 10 expressed (not ten but) three, 11, four, 12, five, and so on.

The titles only of the last two papers were read.

#### SECTION B.—Chemistry and Mineralogy.

1. Dr. Bunsen 'On the Radical of the Kakodyle Series.'

2. Dr. Lankester 'On the Decomposition of Sulphates by Vegetable Matter.'

3. Dr. R. D. Thomson 'On the Composition of Crystallised Diabetes Sugar.'

4. Mr. Booth 'On Spontaneous Combustion.'

5. Mr. Tweedy exhibited Specimens of native Bismuth; and Mr. Pridcaux, a Specimen of a Compound of Oxide of Lead, with the Emphyreumatic Oil produced in the Distillation of Wood, soluble in water, obtained from the Mother Liquors of the Sugar-of-Lead Works.

Mr. J. N. Hearder called the attention of the Section to some experiments which he had performed a few years since on combustion *in vacuo*, but which, in consequence of an accident, which deprived him of sight, he found himself incapable of continuing with accuracy. They related to the effect of diminished pressure on modifying and restraining combustion. The following are some of the experiments which he detailed:—Different mixtures of chlorate of potash with loaf-sugar, sulphur, arsenic, black sulphuretted of antimony, &c., were successively introduced into the receiver of an air-pump, together with a small vessel of sulphuric acid. The receiver was exhausted, by means of a sliding wire through the cap; a bunch of thread was made to touch, first the sulphuric acid, and then the chlorate mixture; but in no case could any combustion be effected. A slight effervescence, and, in the dark, very faint scintillations of light were perceived. The experiment was

reversed, by throwing the mixtures into the acid; but without effect. Into a champagne-glass about one oz. of nitric acid was poured, and a few grains of chlorate of potash and phosphorus were then thrown in; in a few seconds brilliant flashes of light were produced under the acid; but on placing the glass under a receiver and exhausting, the flashes ceased after a few strokes of the pump. On readmission of the air the flashes again appeared, and so on alternately. In order to vary the experiments, Mr. Hearder stated that he constructed a cap for the receiver, through which passed two insulated forceps, between which, within the receiver, a piece of platina wire was placed, bent downwards in the middle so as to touch any substance contained in small clay cups which will attach to a sliding wire, also passing through the same cup. The platina wire was kept in vivid ignition by a powerful galvanic battery. The receiver being exhausted, gunpowder was then placed in one of the cups, and brought into contact with the ignited wire; but without being inflamed. The portions in contact with the wire fused and adhered to the wire, and on depressing the cup were seen in a state of ebullition at a red heat on the wire, and appeared gradually to evaporate. During the process a dense brown smoke was observed to fall to the bottom of the receiver. Air was then admitted into the receiver; and as soon as the barometer-gauge indicated half the pressure of the atmosphere, the gunpowder inflamed with a very faint flash. The experiment was repeated; but nitrogen gas was admitted, instead of atmospheric air; and, strange to say, the inflammation took place when a quarter of the capacity of the receiver was admitted. A mixture of chlorate of potash and arsenic inflamed on readmission of air when the mercury had fallen two inches. Chlorate of potash and sulphuretted of antimony required the admission of a much larger proportion of air to produce inflammation. Whatever combustible mixtures were used, the inflammation was always effected with the admission of a much less quantity of nitrogen than of atmospheric air. In experiments with antimony and arsenic, iron wire was used, instead of platina; the latter being always destroyed by the inflammation of these substances. Mr. Hearder regretted, that having mislaid the register of his experiments, he was unable to detail them more accurately to the Section. Many of the results which he had obtained were very remarkable. He had intended to try the effect of the detonating metallic compounds; but was unfortunately deprived of his sight in 1832 by an accident which occurred whilst making some fulminating silver for the purpose. He considers that the restrained action thus observed arises from the extremely attenuated form which the gaseous matter assumes at the moment of its formation, since it must necessarily expand over the whole receiver, by which means the concentrated action upon the other ingredients is prevented. He was also of opinion that a very valuable set of experiments might be instituted, with a view to ascertain the different pressures under which a variety of mixtures would inflame in different gaseous media. The admission of a known quantity of any gas would, he thought, be an excellent mode, not only of ascertaining the quantity of the gaseous products of the mixtures, but also their chemical composition. The intensity of action of these mixtures might also be discovered by these means, for the action of those would be most rapid which would explode under the lowest pressure.

Mr. Booth, on the subject of spontaneous



combustion, stated that he had nothing new to offer, either in the way of facts or theory; but that he had accumulated a large series of circumstances, which were widely scattered through the scientific and public journals of this and other countries, and which had never before been brought together. Interesting as the subject was in a scientific point of view, it was still more important in a practical and social sense, as it was not unfrequently found that a cause was in silent and insidious operation which produced the most deplorable effects. Through the influence of Sir Chapman Marshall, the late Lord Mayor of London, public notice had been directed very generally to the causes of fires; and the author had, through his means, drawn attention to spontaneous combustion, which first engaged his own mind about twelve years since, from the circumstance of the execution of a young man named James Butler, on suspicion of setting fire to a floor-cloth manufactory. From an investigation which he subsequently undertook, he (Mr. Booth) had no hesitation in asserting that this unfortunate individual was an innocent victim of the law. Mr. Booth then enumerated the very numerous cases in which spontaneous combustion would take place, commencing with pigeon's dung, which as remote an authority as Galen said had taken fire and destroyed a whole house. This was further confirmed by father Casati, a Jesuit, who wrote in the seventeenth century, and who said it was the large quantity of the dung of doves that built in the great church of Pisa, which originally caused the fire that consumed it. He next enumerated horse-dung and stable-litter; turf and peat; torrefied vegetable substances, as saw-dust, roasted coffee, and chocolate-nuts; peas, beans, and lentils; parched bran; wheat flour; oatmeal; hay and clover; cotton; cotton goods; cotton prepared for dyeing; waste cotton; wool: woollen cloths; hemp and flax; corn; charred or heated vegetable substances; malt; madder and saffron; charcoal; charcoal and coal ashes; lamp-black; coal; nitric acid packed in saw-dust; heaps of tan; vegetables boiled in oil or fat; wool-combings; woollen stuffs; candlewick-yarn and cotton-yarn; hempen fibres and oil; drying oils; cere-cloth and oiled canvass; sail-cloth; rags; paper; floor-cloth; with many refuse substances. Since he had first drawn attention to the subject, through the medium of the London prints, he had witnessed a greater anxiety to ascertain the cause of fires; and many which would have been set down formerly as unknown, were now attributed to spontaneous combustion. He also exhibited a diagram of all the fires that had taken place in London for a period of five years; and shewed that, with reference to those trades in which the majority of the causes were unknown, the probability was, from the materials employed in their processes, that these unknown causes were to be found in spontaneous combustion.

Mr. Hunt confirmed the views of Mr. Booth. With respect to the fire on board the *Talavera*, he had found that there was a large bin in which had accumulated various refuse of ropes, sails, &c. The inquiry was, however, smothered, although he had written to the lords of the Admiralty, recommending the institution of experiments upon the subject. A case of spontaneous combustion had recently occurred on board the *San Josef* in that port, from painted sail-cloth, on which the sailors had merely wiped their brushes.

Mr. Hearder stated, that two cases had come before his notice of the explosion of iron bombshells from spontaneous combustion. Here

sulphur was the exciting cause; and the fact was well worthy of investigation. The sulphuret of copper might, under certain conditions, exist in the state of a pyrophorus, which, on exposure to the air would instantly absorb oxygen, and generate heat sufficient to ignite the powder. This opinion is further supported by the fact, that a quantity of a green substance, which has not yet been examined, but which he considered to be most probably sulphate of copper, is generally observed about the mouth of the fuse.

Dr. Daubeny said, that the subject introduced by Mr. Booth was one of extreme importance, particularly as it appeared that so great a calamity as the near destruction of one of the largest dockyards in the kingdom was produced from it. From the new work of M. Leibig, it appeared that slow combustion was most actively in operation, and particularly in vegetable mould.

#### SECTION C.—Geology and Physical Geography. Papers and Communications.

Mr. Wyld to exhibit Maps. (These admirable have been frequently noticed in the *Literary Gazette*.)

Dr. Moore 'On the Strata penetrated in boring an Artesian Well at Plymouth Spa.'

Dr. Moore 'On Slate Fossils above the Limestone in Plymouth Sound.'

Mr. J. Boswarva, to shew Plans and Sections of the Heave of a Copper Lode.

Mr. Dawson, to exhibit a Model of the great Landlip at Axmouth.

Major Harding 'On Fossils from Hangman Hall.'

Mr. Bellamy 'On the Distribution of Devonshire Fossils.'

Such was the programme; but spontaneous matter sprung up, of much greater local and national manufacturing interest; shewing that the papers are often only the skeletons, and the discussions the sinews, muscle, and marrow of the Section.

The first paper was from Dr. Moore, "On the Strata penetrated in boring for Water at the Victoria Spa, Plymouth."\* An attempt was made, during the erection of the baths, by the late Mr. Lockyer, to obtain water by boring into the rock beneath. The operations were conducted by Mr. Westaway; and it required several months to penetrate the hard rock to a sufficient depth. Although the principle acted on was similar to that employed in forming Artesian wells, yet the conditions necessary, viz. a stratification of clay and sand over chalk, did not exist in this instance, consequently an overflow of water was not to be calculated upon, yet the supply has not been at any time found deficient. The borer passed down to the extent of 365 feet, through the following strata:—

Clay slate . . . . .	31 feet	Sandstone . . . . .	4 feet
Limestone . . . . .	150 "	Red and blue slate 20 "	
Soft blue slate . . . . .	20 "	Dunstone . . . . .	8 "
Red sandstone . . . . .	3 "	Clay slate . . . . .	20 "
Red slate . . . . .	37 "	Sandstone . . . . .	12 "
Limestone . . . . .	50 "		

Dr. Moore entered into some geological explanations of the nature of the different rocks, and pointed out some modifications of structure, which might support the opinion that our lime-rocks were formed in a similar manner to those of modern coral-islands; but admitted that in general there was a true succession of calcareous beds, alternating and forming an uninterrupted series with the slates. He then dwelt on the nature of the water, in reference to its chemical combinations, as analysed by Professors Faraday and Daniel, comparing it with

\* We may take this opportunity to notice a luxurious improvement in Plymouth since we visited it some years ago, namely, the establishment of the Royal Victoria Spa, and excellent baths. We found the baths of a very superior order; great cleanliness and attention; and the charges extremely moderate. They do credit to the proprietor, and must be a comfort to the place which merits every encouragement.—*Ed. Lit. Gaz.*

the known analysis of sea-water, and pointing out the differences between them. Thus, in a pint imperial measure are found—

Dry components of Sea-water of sp. g. 1.0263.		Dry components of Victoria Spa, of sp. g. 1.0133 at 62°.	
	Grains.		Grains.
Chloride of sodium	159.3	Chloride of sodium	98.64
Muriate of lime . . .	5.7	Muriate of magnesia	18.68
— of potash, a trace		— of lime . . . . .	15.10
Sulphate of soda . . .	25.6	Sulphate of soda . . .	9.55
		— of lime . . . . .	8.94
Bromine, iodine, hydrobromic acid, hydriodic acid, sulphuretted hydrogen.		Carbonate of lime . .	2.06
		— of iron . . . . .	0.69

The evidence elicited indicated, that while the close vicinity of sea-water led to a supposition that it contributed to the contents of the spa, yet the analysis proved that it possessed other important ingredients capable of considerably modifying its qualities. Thus, while it has lost bromine, iodine, and their acids, it has acquired sulphate of lime, and carbonates of lime and iron, rendering it equivalent to the saline chalybeate waters of Cheltenham and Tunbridge Wells. The author then pointed out the manner in which these ingredients might be supposed to be obtained, by the chemical affinities exercised in the passage of both fresh and salt water through the rocks under consideration; and stated that its medicinal qualities had been proved to be considerable, from an experience of several years' duration, but forbore to enter upon this topic, as it was a subject more fitting for consideration at the Medical Section.

The paper was followed by some interesting remarks from Professor Sedgwick on Artesian wells in general, shewing the cases in which they succeed and fail. He mentioned the great good that had been derived from these borings in Essex, and the reasons that had produced failures in some parts of Norfolk, and other places further north; he attributed these failures to the nature and order of the stratification. Other important questions with regard to temperature, &c. arose from the subject also; but these rather belonged to the Physical Section than theirs. In a discussion that ensued between him and the Rev. W. Conybeare, he stated that the immense borings for coal in the north of England, which produced enormous quantities of water, only obviated by machinery of the most extensive description, were of the nature of Artesian borings.

Dr. Buckland stated the result of some practical observations he had been enabled to make during the last few days; but before he proceeded to the specimens he had collected, and which were destined to the Museum of Economic Geology, which posterity would call by the name of their president, he would briefly explain a remark he had made on a previous day, as to the marine animal (*the pholas*), which, it had been stated, was destroying the Breakwater; and which remark had given rise to some misconception. In speaking of all subjects geologically, every one knew that they drew very largely upon time; and though he believed that in nine or ten thousand years the fabric of the Breakwater might be destroyed to a great extent, yet he should not therefore blame any engineer, who, commencing a structure many years ago, had used the material cheapest and nearest at hand, which, in this case, was the Oreston limestone. He believed, too, that the ravages of the animal were confined to a small space, at no great depth, being the space between high and low-water mark, and that at the base of the water the structure was undergoing no change. He then proceeded to describe various specimens of granite, and other products of Dartmoor and the neighbourhood, which he had lately collected. The first was

of a red granite, exceedingly hard, capable of beautiful polish, and fitted for the construction of columns, vases, and other ornamental works. He then produced a specimen of potter's clay, found at the Morley Works, in the parish of Shaugh, about seven miles distant. This clay was formed from the granite of the neighbourhood in a state of decay, by the decomposition of the felspar; so that this substance is reduced to a state resembling quicklime, or flour. By being subjected to streaming, and the action of water, the finer particles were washed from the coarser, till it arrived at the condition in which it appeared in the specimen produced, or that of pure potter's clay. He stated that Lord Morley had sets of china made from it of the finest description, and exhibited a small cast of a brace of greyhounds, made from this clay for his lordship, which was extremely elegant and beautiful. The colour was as pure a white as the finest alabaster; and to show the tenacity of the clay, he pointed out a small chain connecting the dogs, made of separate links, and as flexible and perfect in its construction as a chain of metal. It was, therefore, admirably adapted both to useful and ornamental purposes. From this clay being found in the neighbourhood of this port, he had no doubt but there would be a great demand for it, in conjunction with the St. Austell clay, which was formed in the same manner as that of Shaugh. The potteries might be supplied with it to an unlimited extent; for there were hundreds of acres on Lord Morley's property, applicable to the finest manufacture of native china and ornaments. Dr. B., in continuation, produced a specimen of the grey granite of Dartmoor, stating, that at the beginning of working the quarries, it was usual to send away the stone found at the surface, which is of an inferior quality to that found at the greater depth. In consequence of this, the granite of Dartmoor was excluded from the sorts used in the construction of London Bridge. This would not have been the case had the quarry been worked to the depth it is at present, about sixty feet down, where the stone now taken up is of a very hard and durable kind. He described the state of the walls of the prison of Dartmoor, built of the surface-granite, as that of complete decay. They absorbed moisture to an extent that rendered them like sponges; and this had rusted the hooks and iron-work driven into the walls to such a degree, that he could rub them to powder with his hands. The only remedy for this was to cover them on the outside with Roman cement or tiles. The quality of the rock at present quarried there was of the best kind; the base of the column to Lord Nelson, in Trafalgar Square, was being built of it; and he himself (Dr. Buckland) had been instrumental in having it used in an extensive work at Christchurch, Oxford, which they hoped would last for a thousand years, or even till they wanted a new Breakwater. He produced a specimen of tin, and of tin-ore, intended also for the Museum of Economic Geology; and exhibited a fire-brick made from the rubbish and refuse of tin-ore: the bricks thus made had been subjected to the heat required for the black-bottle glass, which was the most intense of all, without injury. This was using the rubbish, by which they might pay their way and pocket the tin. He briefly alluded to the discovery of the application of decomposed felspar to the manufacture of soap; and produced a specimen of an earthenware pipe, manufactured at Bovey, and which, he stated, was of precisely the same kind as the pipes laid down for the conveyance

of water by the Romans, some of which he had himself dug up in Palermo, in Sicily, and in Oxfordshire. He could not see why they should go to the expense of cast-iron, at 2s. and 3s. per foot, while they could get them of pottery for 1½d. and 2d. a foot, and which would last for thousands of years; they had also the advantage of conveying the water in a purer state than iron pipes. They were equally well calculated for gas-pipes as for water-pipes. In concluding his remarks on the economic geology of the district, he called the attention of the ladies to the fact, that Dartmoor abounded in amethyst, of which he produced a specimen. These amethysts, he said, were in every respect applicable to the purposes of jewellery.

Dr. Moore then read a communication "On slate fossils above the limestone in Plymouth Sound."

The president stated that he had not been able to procure the paper promised by Mr. Boswarva, shewing the plans and sections of the heave of a copper lode.

Mr. Dawson exhibited a well-executed model of the landslip at Axmouth; of which Mr. Conybeare gave a long account, and ascribed the convulsion to the superior strata imbibing water, till they became too heavy to be supported by the subjacent beds of matter, which were of a loose sandy nature.

Dr. Buckland also at some length defended the theory that ascribed the convulsion to hydrostatic pressure. By some it had been imputed to the action of an earthquake; and the most absurd reports of the phenomena said to have occurred had been circulated. It had even been stated, that a vein of copper had been formed, and some expense was gone to in preparations for fetching the ore away: it was not, however, copper, but copperas, which had been mistaken for it; he had a specimen (which he produced), and it was nothing but the pyrites of iron. He was firmly convinced of the soundness of Mr. Conybeare's theory. No shock was felt in the neighbourhood of the slip; and the stone placed by the Association at the mouth of the Axe was not displaced in the slightest degree. [See, however, our notice of the similar phenomena all the way along the coast to Weymouth, *Lit. Gaz.* No. 1282, p. 531, col. 3.]

Prof. Whewell confirmed the statement of Dr. Buckland, as to the unaltered position of the stone alluded to, ascertained by the most exact measurement.

Major Harding read a paper "On fossils from Hangman Hill;" which was followed by Mr. Bellamy's paper "On the distribution of the Devonshire fossils." The discussion was taken on both these papers jointly. Mr. Bellamy stated that the fossils comprised about 150 different species. His object was rather to direct their attention to the specimens themselves, than to offer any remarks of his own upon them, much less to enter into any theoretic details.

Prof. Phillips addressed the Section at considerable length, on the character of the older formations, and the value of organic remains in determining their age, to which purpose he did not consider them sufficient. He noticed the fact of some kinds of fossils being found in different strata; some of the ancient strata contained carnivorous mollusca, but they were not the same as in the modern. He stated the general characteristics of the Devonshire fossils to be that of a high antiquity. From the organic remains, it appeared that these strata (of Devon) belonged to an intermediate period between that combination of life called the

silurian, and the later one called the carboniferous period. He pointed out the difference between the strata of North and South Devon, and stated, that a greater similarity existed between those of North Devon and Cornwall. He shewed that they had not been classed with sufficient precision; and anxiously wished the Section not to believe that they had solved the problem when they called them the Devonian series, or had given them a definition when they identified them with the old red sandstone.

[This luminous address, certainly one of the most admirable in matter and in manner delivered at this meeting of the Association, was listened to with marked and almost anxious attention, and at its close elicited the warmest applause of the auditors. It reflected great honour on Prof. Phillips's geological attainments, and was a fit finale to a brilliant campaign.—*Ed. Lit. Gaz.*]

#### SECTION D.—Zoology and Botany. Papers and Communications.

Prof. Owen 'On the genus *Thylacynus*.'  
Mr. P. F. Bellamy 'On two Peruvian Mummies, with Specimens.'

Colonel Smith 'On the Colossal Sepioid.'

Mr. Patterson's 'Report of Committee on Marine Zoology.'

Mr. F. C. Bellamy will exhibit Specimens of New Devonshire Animals.

Dr. Tripe 'On a new species of *Pontia*.'

Dr. Richardson 'On some new genera of Fishes from Von Diemen's Land.'

The skulls of the Peruvian mummies were shewn, and were of singular shape. They had evidently been much altered from the form of any of the human races, Negro, Mongol, or Caucasian, by the use of bandages to compress them in infancy. The upper jaw projected much. Some conversation took place respecting their date and origin; but it was altogether conjectural, and led to no result.

Col. Smith's paper was a very popularly digested *résumé* of ten years' observations and collection of statements relating to sepia; and ranging from the most minute to the most enormous of these remarkable creatures. His descriptions were illustrated with strange-looking and monstrous drawings, representing the animals as seen by various witnesses. There was one observed by Gen. Eden, when a passenger in the *Modeste* in 1807, which was twenty-two feet in length. Another instance was given of a squid, taken up at sea, with a horny bill and suckers, the flesh very soft, and the arm of which extended to no less than thirty-six feet. [One of these might be mistaken for a sea-serpent; or the polypos itself for a kraken.] On a voyage which he himself had made, the colonel had seen one floating white on the blue ocean, and apparently of the length of half the top-gallant, and which, upon closer examination, turned out to be but the arm of a sepia. A still more extraordinary specimen was absolutely taken for a sand-bank by Capt. Blaney in a king's ship, who with sixty men landed on its back, and found the skin not slippery. It was, however, in a dying state, and the stench became intolerable. The colonel told the story of a tablet at St. Maloes, which seemed to confirm both the natural and legendary history of such prodigious phenomena; and concluded his very amusing communication with some reflections on the many ancient and modern relations which might be attributed to their appearance.

Professor Owen mentioned a specimen described in *Hawksworth's Voyages*, and which had passed (as we understood) from Capt. Cook to Sir J. Banks, who presented it to Dr. Hunter for his museum, where this cuttle-fish was still



preserved. Like one specified by Col. Smith, it had horny suckers and hooks; but it was only seven feet in length.

Mr. Prideaux exhibited some copper-sheathing, peculiarly drilled into small holes and thin parts; and announced the question, whether these were owing to animal action, or to chemical decomposition.

Dr. Lankester inclined to the latter opinion, and considered the wasting to be caused by sulphuretted hydrogen. Perhaps oxidation of some other metal combined with the copper; or it might be galvanic action on alloys which were not equalised in the process of smelting.

[If produced by sulphuretted hydrogen, which we think highly probable from the destruction which takes place on the coast of Africa, then we may trace to the same cause the loss in shipping, and fatality to human life.]

Dr. Daubeny exhibited a very convenient botanic press for the preservation of specimens.

Dr. Tripe made a communication on a new species of Pontias—small white butterflies, with four black spots—which were seen in very hot weather, and in the middle of the day. They differed from the lepidoptera around them; seemed attached to the common blackberry; and were limited to two fields near Whitesand Bay.

Mr. Patterson's Report on Marine Zoology (the Dredging Committee; see our song thereon in the *Lit. Gaz.* for 1839) stated, from Mr. Forbes' book,\* and his own observations, that they had dredged, during autumn, a portion of the Scotch coast opposite to Belfast, and found a great difference in the produce. As yet, however, they were only gathering facts, of which, when completed, their report would be made. In the meantime they invited the co-operation of all persons residing on the sea-shores and addicted to similar pursuits. The communication of every apparent novelty would enable them to fill the field in a more satisfactory manner.

Mr. Caldwell (an American professor) read the commencement of the opening of a paper on the different races of man; which we have no doubt would contain much matter of interest, if developed at full length, though it seemed to us, from the proem, that it would require volumes to do so. We gathered his theory to be, that there were more than one original race; which, he held, could never, from natural causes, have been transformed into the five great and striking divisions which now occupy the earth. He thought the Caucasian and African peculiarly distinct; and denied the possibility of change from one to the other. And he insisted strongly on the fact, that the internal differences of structure, &c. had never been sufficiently attended to by physiologists, who had founded their doctrine of a single original race on the comparison of external organisation.

#### SECTION E.—Medical Science. Papers and Communications.

Remarks 'On the Value of Opium as a Remedy in Rheumatism,' by Therophilus Thomson, M.D.

Remarks 'On a Case of Empyema,' by Mr. Squire.

Dr. McGowan 'On a Case of Empyema successfully treated by Paracentesis.'

Report 'On Poisons,' by Dr. Roupell.

\* Abstract of Cases on Hepatic Abscess, &c., by Sir D. Dickson.

\* Facts and Observations on a Case of Deafness and Blindness,' by Dr. Fowler.

\* Observations on the Ventilation of Ships of War and Steam-Boats, and a Sketch of the arrangements adopted in the Steam-Ships of the Niger Expedition,' by Dr. Reid.

\* Noticed twice in Reviews in *Literary Gazette*, and well worthy of acceptance in natural history.—Ed.

\* Remarkable Case of Hydatids, and of extensive Disease in the most important Organ, under the mask of Rheumatism,' by Sir David Dickson.

Of Dr. Reid's system we have had so many occasions to speak, and also described its application to the Niger ships when we visited them previous to their sailing, that any further account would be sheer repetition. The other subjects possessed interest to the medical profession; but require no report in a popular journal, or even in one which records the progress of general science.

#### SECTION F.—Statistics. Papers and Communications.

\* A comparative Statement of the Income and Expenditure of certain Families of the Working-Classes in Manchester in the Years 1836 and 1841,' by Wm. Neild.

\* A Statistical Account of the Monte de Piété of Rome, Paris, and other Cities on the Continent,' by H. J. Porter, F.R.S.

\* A Communication from M. Quetelet upon 'The Collection and Application of Facts relating to the Seasons upon various branches of Science, with reference more particularly to that of Statistics.'

\* Statistics of the Shire of Haddington,' by J. Wilson, of Thornhill.

\* Economical Statistics of Sheffield,' by a Local Committee.

Mr. Neild, the mayor of Manchester, read the paper announced, which went into minute detail, and was consequently very long. It furnished a singular picture of the condition of the populous town of Manchester. Every item of the income and expenditure of very many families, both mechanics and labourers, during the space of the two years mentioned, having been taken, and the weekly average of each family read to the meeting. Different results were manifest, according to the different classes to which those families belonged, and of the years in which the statement was taken; many families in 1836 having a balance, or a larger balance, to expend in the purchase of clothing, and in religious instruction; whilst in 1841 they had little or nothing for such a purpose. In other families, on the contrary, the opposite was the result.

A lengthened and desultory discussion ensued.

The president remarked, that the report was a very excellent one, as they could only obtain valuable statistics of the condition of the labouring classes by such statements. He was highly gratified to find, by the report, that many families who received but a guinea-a-week for their support were able to lay by no less a sum than 2s. 6d. for clothing and religious instruction. He should not have supposed that so much could have been saved from their weekly wages: he was, on the other hand, sorry to find that many families expended the whole of the wages they received, and that not the slightest provision could be made for procuring instruction and clothing: indeed it had been seen that in more than one instance the expenditure exceeded the income. Such a state of things demanded their attention and their exertions, in order that persons so situated might be elevated above mere animal existence.

The Rev. S. Rowe was rather surprised at one of the remarks which had fallen from the president, in which he had expressed some degree of wonder at the fact, that some of the families included in the report were enabled to save 2s. 6d. out of their weekly wages of a guinea. He (Mr. Rowe) only wondered that they could not save more, knowing, as he did, from the knowledge he had of an agricultural and a manufacturing population in this part of the country, that families who received only from 10s. to 18s. per week could save as much, and, in many instances more, than 2s. 6d. from their wages.

Mr. Gill observed, that he employed a large number of men, and he knew that many families receiving but 13s. per week could lay by 2s. 6d. out of that sum. He could only account for the difference in the state of the labouring classes in this neighbourhood and Manchester by food being much dearer in the latter place, or by a better system being adopted here in the expenditure of their weekly wages.

Mr. Porter stated, that amongst the labourers he employed in Ireland many families saved 1s. out of their weekly wages of 6s.

Further observations were addressed to the meeting by Lord Ebrington, Dr. Byrth of Liverpool, Mr. Perry, Mr. Rawson, and others, from which it appeared that both rent and food in Manchester were much dearer than in this neighbourhood. It was also stated, that the houses of the labouring classes in the former place were generally better furnished, and that they were more expensive in their habits.

Mr. Gill having announced his intention to prepare, on the plan of the paper read by Mr. Neild, a statement of the income and expenditure of three hundred of his workmen during every week in the ensuing twelvemonths, the subject dropped.

#### SECTION G.—Mechanical Science. Communications and Papers.

Mr. Johnson's Description of the Machinery used at the Granite Quarries on Dartmoor.

\* On a Method of disconnecting Paddle-wheels without stopping the Engine,' by Capt. Taylor, R.N.

\* On the Plymouth Breakwater,' by W. Stuart.

\* New Construction of Die-Stocks for cutting Screws,' by J. Whitworth.

\* On the Wire Rope,' by Andrew Smith.

\* On the Trussing of the Roadway of the Montrose Suspension Bridge,' by James M. Rendel.

\* On the Substitution of a Woolen Fabric covered with Caoutchoucas as a substitute for Corks,' by W. Brockendon.

Mr. Johnson's paper contained an interesting and minute description of the machinery and quarries, as well as of the applicability of the granite,—a subject of the greatest local interest. The reading of this paper elicited many remarks, as well with respect to the Dartmoor granite, as with regard to the numerous experiments for crushing granite. Mr. Johnson's creeping machines, for lifting or moving the huge blocks about, are indeed wonderful to behold.

Mr. Rendel, being well acquainted with the nature of the granite as a building material, and the excellence of its qualities, was certain that the Dartmoor granite was as good as any found in her majesty's dominions. The texture was very fine, and yet not too fine; and there was a good aggregation of all that constituted granite. It was also very large; there was very little waste; and there was another good thing,—very long pieces of stone of very small scantling could be obtained. No granite ought to supersede that of Dartmoor, either for quality or durability. He measured a block about two years since, it was 67 feet in length, 5 feet by 6 feet at one end, and 3 feet by 5 feet at the other. It was also perfectly sound. If there had been facilities to remove it, he considered it would have been fit for any column.

The president alluded to the possibility of working granite to any particular form; and stated that at Aberdeen the most beautiful granite vases were made.\* He had also been shewn a beautiful granite slab, which with the carriage from London had only cost £40; it was only about 3½ inches thick. He hoped that before the British Association came here again, it would be found that articles of this description were manufactured in the West of

\* See our *Literary Gazette* of last autumn.

England of Dartmoor granite. In Cornwall, also, there was the most beautiful porphyry; and he did not see why it should not be worked into articles in this neighbourhood, as well as elsewhere. With respect to the durability of granite he mentioned one fact, that upon a stone of a bridge, near Buckland Monachorum, built of granite, had been found a Roman inscription, with the initials of some Roman commander, clearly shewing that it must have been there two thousand years.

Mr. Enys remarked upon the cleavage of granite; and said that he believed it required different power to be split in different positions.

Mr. Rendel stated that, as far as his experience went, he had found no variance in the strength of the Dartmoor granite; they had, however, but rarely found it necessary to cleave it out of the direction of the beds. Whatever kind of stone might be required by the engineer, it could be found—he did not use the term geologically; but the beds appeared regularly stratified. The granite might well supersede the limestone for ordinary building-purposes. Of the latter there was the waste in cutting forms of mouldings; and it often happened that after the stone had been very nearly completed, it must be rejected from some accident,—a circumstance which must but very rarely happen with granite.

Mr. Eaton Hodgkinson had tried a great number of experiments with various materials, to ascertain the strength of each. He had adopted the only mode by which he believed a correct result could be obtained. The surfaces had been made perfectly square, and rendered completely smooth, to make them perfectly prismatic; the process of pushing was then effected; and with respect to granite, the result had been that they split in the direction of the laminae. He mentioned this, to shew that the practice of placing these stones in buildings without any reference to strata was exceedingly injudicious, when they were required to bear any weight.

Mr. Enys knew that the strength of granite was altogether unlimited, with regard to the proportions of other stones usually made use of in buildings. He had found in the Cornwall granite a difference in the strength; and he had no doubt the same difference existed in the Dartmoor and all other granite.

Mr. Rendel believed the granite stone was usually placed the bed way, because it converted better. Workmen called it the grain of the stone; it was very well known that unless it was placed in the way of the grain, it would, in effect, be weaker.

Professor Moseley complimented Mr. Hodgkinson on the accuracy of the experiments he had made. Nothing had so much tended to the injury of practical science as inaccuracy of experiments; and whoever by any means published inaccurate results, was a traitor to the cause of practical science. The result of experiments which had been made with respect to crushing stones had been generally inaccurate. He could not tell why they had always adopted the cubical form: certainly the best was the rectangular form.

[This practical discussion of a subject of national interest is but one example of the great utility of the meetings of the British Association; distinct from the scientific data of their measures and reports, which may for ever be referred to as landmarks in the progress of science and scientific discovery.]

Mr. Rendel exhibited and explained a model of the suspension-bridge which crosses the

estuary of the South Esk in Scotland. In point of proportions it was the second bridge of the kind in the kingdom—only one bridge exceeded it in size. After various accidents, it struck Mr. R. that if a system of trussing were to be employed, it would effectually prevent the upward as well as downward motion. Vertical and longitudinal trusses were therefore made, extending above and below the line of the bridge, the bridge being divided into three compartments, viz. a carriage and two footways. This had answered exceedingly well; for while formerly in a gale of wind the motion extended to 3 or 4 feet, it did not now exceed 3 or 4 inches. The weight of the new certainly exceeded that of the old roadway, but not more than seven or eight per cent. The dimensions of the bridge were: length between the points of suspension, 450 feet; width of roadway, 16½ feet; and width of footway, 4 feet 2 inches.

Mr. Stuart's paper on the Breakwater was read, and, as might be anticipated, excited a great sensation in these parts. Mr. Stuart gave the history of its construction and casualties, from the laying of the first stone, August 12th, 1812. He then adverted to the recent papers on the subject in the Geological Section, and particularly to Mr. Walker's on Friday, respecting the ravages of the *Sarcina rugosa*. His preference for a stone breakwater, and not a wooden one, was not the least shaken by these representations. He had no fears, either, that the present Breakwater had, on the one hand, been productive of very injurious results to this great naval and maritime port, by causing a deposit within, and consequent loss of depth of water of about five feet; or, on the other hand, notwithstanding the great outlay on the part of the government in its construction, that it would be entirely destroyed by submarine agency.

On the contrary, Messrs. Rennie and Whitebey's report declared that, on a consideration of the whole question, they were of opinion that there was no possible danger of its becoming more shallow, and that no further deposition of silt or mud would take place, except indeed immediately without and within the Breakwater itself, out of which they conceived no injury would accrue. As regarded the Sound, the authorities had not overlooked the subject. In consequence of a communication in July 1838, Mr. Walker was directed to report upon the depth of the sand, &c. A very long and laborious survey took place by that gentleman, in the course of which upwards of 2000 soundings were taken. The result was, that in the mean of these soundings very little either of decrease or increase had taken place in the depth of the water, except close to the structure itself. This result was not certainly a sufficient reason for alarm, or to justify any expensive measures to remove the cause of the deposit-matter. The paper then referred to the submarine agency in connexion with the Breakwater, and which some had stated would ultimately demolish that immense structure. Mr. S. had been connected with the Breakwater since its commencement, and had had opportunities of watching the progress of the insects which had been alluded to; and he gave the same opinion as Dr. Buckland, that they work only between low-water, at spring and neap tides, to a depth of about three inches. The interior of the structure had not been affected; for he had occasion to have stones removed which had been deposited upwards of five and twenty years at a depth of five feet, and no holes, the work of such an insect, had been discovered. There

were stones in the bottom of the Sound perforated with holes, but the insects in them were found to be dead; and who could ascertain when or where this perforation might have taken place? In conclusion, he assured the inhabitants of this neighbourhood, and all who were interested in the fact of its remaining as valuable to shipping as at present, or who were anxious that the national work, the Breakwater, should not be destroyed, that from either of the causes named, the one was not likely to be injured, nor the other impaired.

Capt. Tayler spoke in support of the report of the House of Commons, and in favour of his theory that wooden breakwaters were preferable to and cheaper than stone.

Mr. Rendel complimented Capt. Tayler; and agreed that, under some circumstances, wood would be better than stone; but he also warmly eulogised the existing Breakwater.

Capt. Tayler explained a patented method of disconnecting paddle-wheels without stopping the engine. The crank was disconnected independent of any bolt, the surface to which the wheel was connected being perfectly smooth. The mode by which the inventor proposed to render the action of the engine non-efficient, by the man at the helm, without the knowledge of the engineer, was by means of a shield, the backwaters being avoided by means of leathers. Capt. Tayler also alluded to a plan for weighing anchor by the engine.

Mr. Grantham, the inventor of another plan, doubted the efficiency and practicability of Capt. Tayler's. He thought the attempt would be most disastrous, and destroy the wheel.

Capt. Tayler defended his invention; the principle of which he declared to be quite new.

The next paper was "On a new Construction of Die-stock for Cutting Screws;" patented by Messrs. Whitworth and Spear. In the improved stock, the dies are cut with a master-tap, double the depth of the thread larger in diameter than the shaft intended to be screwed. After starting the thread true, they will continue to cut with equal facility to any depth required. The principle of construction involves a two-fold peculiarity, viz.: first, in the form of the die; and, secondly, in the direction in which it is moved forward. The improved die may be described as formed from the common die, by dividing it either into two equal parts,—the plane of section being parallel to the sides of the die; or into equal parts,—the plane of section being at an inclination to those sides. The angle of inclination may vary, but the intersection must always pass through the centre line of the arc of the die. That centre line, therefore, becomes one of the cutting edges of the improved die. The direction in which the die may be moved forward has considerable latitude. In the case of the common die, the direction is always that of a plane passing from the centre line of the die to the axis of the bolt. This is the only direction in which a common die could be brought up to answer its intended purpose, namely, to cut with both edges into a cylindrical shaft. It is also precisely the direction in which the improved die cannot be brought up. Its contact with the bolt would then be only in that central line, and both its cutting edges would separate from the lessening curve at the base of the thread. In starting the thread, the die will cut with either edge; but afterwards it can cut only with one, and its direction must be such as to keep the cutting edge in contact with the bolt. The direction may be either towards the axis of the bolt, or towards a point behind the axis. When the improved

die is moved towards the axis, the plane of its direction to that axis, instead of passing through the entire line of the die, falls outside.

These characters will serve sufficiently to distinguish the improved from the common screw-stock. The principle of its construction admits of great variety in the plan, but that of the stock now exhibited appears to unite every advantage. Its simplicity and efficiency are equally remarkable. Three dies are introduced, viz. a fixed die of the common form, and two improved dies. The fixed die acts as a cutter in starting the thread, but afterwards serves principally as an abutment for the others. A groove is cut through the thread, to improve the cutting and steady power. The two improved dies are moved by inclines in a slide, drawn up by a screw and nut. The direction of the dies is deflected from the axis of the bolt towards a point behind it. Had their direction been towards the axis, it would have been necessary to move the fixed die forward simultaneously with them, in order to preserve the relative position of the axis, and to keep the cutting edges of the dies in contact with the thread. It will be perceived, that with a fixed die, the position of the bolt in relation to the cutting dies must undergo a continual change as the thread is cut deeper. If, at starting, they moved towards the axis, their direction during the progress of the thread would be in advance of the axis, and their position for cutting would gradually become more and more unfavourable; but by deflecting the dies from the axis to a point behind it, provision is made against the change in its position, while that of the dies themselves is rendered still more favourable for cutting, in consequence of the greater degree of clearance which is thereby afforded.

The range of the improved stock is considerable, being more than double that of the common stock of corresponding size. The economy of labour is still more remarkable, a boy being able to do the work of two men,—for example, to screw a bolt one and a half inches diameter.

Mr. Brockendon exhibited his very useful patent of wool covered with caoutchouc, instead of corks, for bottles. We have long since described this valuable invention in the *Literary Gazette*; and, what is more, we have long used these stoppers, and from experience can say that they are far superior to every other substance.

Mr. Smith's samples of wire-rope were retained in the Model-room, Devonport; and Mr. Smith was not present; but Mr. Lang, of the Royal Polytechnic Institution, London, read a paper on its capabilities, and pointed out its admirable adaptation for the standing rigging of ships. He stated, according to the report of Mr. Symonds, of her Majesty's dockyard, Woolwich, that in the Falmouth, rigged with wire, only one half of the surface was exposed to the wind that would have been, had she been rigged with hemp, the weight was diminished, and in the prime cost, taking weight, size, and strength into account, there was a saving of 30 per cent; whilst the durability of wire-rope is at least three times greater than hempen cordage. It had been successfully used in mines, and in the Blackwall Railway.

[Here endeth the Sections; and, except, perhaps, a few brief notes, we do not think we shall need to recur to this meeting of the British Association, of which we can truly say, that an ample and sufficient account is contained in the four Numbers of the *Literary Gazette* for the month of August.]

Having terminated the scientific and business portion of our account of this meeting (for we reported the final arrangements and elections on Wednesday for the ensuing year in the *Gazette* of the 7th), it yet remains for us to mention a few of its concomitant circumstances. Monday and Tuesday, as we have before stated, were days of deluge. On the former, the Hindostan, a fine ship of 73 guns, was launched from the Dockyard, and was a grand sight to thousands of spectators assembled to witness it within a commodious shed erected for the occasion. In the evening the illumination of the Caledonia was to us a more novel and not less brilliant spectacle. The dark mass heaving on the bosom of the shadowy wave, all at once blazing from stem to stern, and from water-edge to topmast, with blue lights, produces a striking effect. It is like the work of magic; and in a minute, as the flame-clad vessel relapses into its former gloom, a supernatural vapour, composed of the smoke given out from the torches, seems to enfold it; and if ever the emblem of a Phantom-ship could be imagined, it was there floating in its lurid shroud, and gradually melting from the sense. We had the gratification to see it to advantage from the lawn in front of the Government-house, the residence of the commandant of the district, Major-Gen. Ellice and his lady, where a large party of the *illuminati* were *ecstasied* by a splendid collection of the beauties of Devon and Cornwall—counties unsurpassed in that respect by any in the British Empire.

At the Devonport *soirée* on Tuesday the Hall was very tastefully decorated; and Dr. Reid proceeded to explain his ventilating system; but took up so much space in opening the *valves* of his discourse, that he left himself no time for its sufficient *winding up*. Mr. Dent explained his various *striking* improvements in clocks and chronometers. Sir I. Brunel produced plans and a two-hourly registry of the works of the Thames Tunnel, on which he gave a brief *un-boring* lecture; and Mr. de Moleyns exhibited his voltaic combination, which, owing to the lateness of the hour, he could not *connect* in detail;—all which instructive matters, together with music and refreshments, occupied the company till past eleven o'clock.

On Wednesday the last general meeting of the Session took place,—the president in the chair, who addressed a few introductory remarks to the assembly. Col. Sabine, general secretary, read the report of the whole proceedings; and Mr. J. Taylor made a statement of the finances. Dr. Robinson, in a glowing speech, moved thanks to the foreign visitors, which was seconded by Lord Adare; and acknowledged by Prof. Ritter. Sir T. Acland followed with a similar compliment to the naval and military and civil authorities, to whom the Association were so much indebted for their attentions; which Dr. Buckland seconded; and Capt. Sanders, R. N., and W. Hancock, Esq., returned thanks. Thanks to the local officers of the Association were moved by Mr. Taylor and Prof. Phillips, and replied to by H. Woolcombe, Esq. Prof. Sedgwick, in an address, in which occurred some of the noblest passages to which we ever listened,\* moved thanks to the neighbouring

\* One illustration particularly struck us, in which the eloquent speaker, adverting to their common search for *Truth*, described it as a region of light, whose limits they were all endeavouring to extend, and that all their little skirmishes were but partially luminous borders had but this end in view. The whole image was admirably ex-

noble and gentlemen of the towns for their public and private hospitalities; which was seconded by Prof. Lloyd, and carried with loud acclaim. Mr. Prance answered for the towns in the name of Mr. Gill, who was absent; and Lord Morley for the noblemen of the vicinity, in the stead of some one else who was appointed to the office; but no one could so worthily and consistently perform its duties as the noble earl himself. The last motion was a tribute to the chair, ably proposed by the Marquess of Northampton, and suitably acknowledged by Prof. Whewell.

*Whips and Strays.*—Among the whimsicalities of the meeting, a native wag on the road to Tavistock stuck up a written placard on the wall of his fruitful garden—"Members of the British Association, beware of spring-guns!"

A subscription was opened for the erection of a monument to the memory of Sir H. Davy, a distinguished ornament to the county of Cornwall. The oft-told story of the curious foreign address to him as *Sironferidevi*, which reached him, in course, through the post-office, is almost equalled in drollery by one we heard from a lady of title on a visit at Plymouth, but who resides at Kensington Gore. It was from Italy, and only in three languages:—"To Miladi de D—, *Ponte des Chevaliers*"—i. e. Knightsbridge!!

The approach to Plymouth by the beautiful valley of the *Exc* made such an impression on a legal coach-top passenger, that he declared, if he were a judge, he would issue on the river a writ *Ne Exc-at Regno*. This would be a break-water!

The praise of railway-travelling was rather originally advocated by a companion of ours; whose admiration was chiefly excited by its putting an end to highway robberies. "Sir," said he, "it has extinguished one of the most extensive, dangerous, and worst species of crime. A footpad, sir, cannot put a pistol to the Boiler, and stop the Train by threatening to blow its brains out, so that the passengers may be plundered at leisure."

*Apropos* of this railroad-speed in travelling. It is true that in a great measure it annihilates space, but it by no means follows that it annihilates time. On the contrary, though distance is rapidly passed, the ideas are as rapidly multiplied. We gain in both ways.

#### PARIS LETTER.

Paris, August 24, 1841.

*Academy of Sciences.* Sitting of Aug. 16.—The greater part of this day's sitting was occupied by the reading of a lengthened report, by M. Arago, on the discoveries made in the Antarctic regions by the expedition under Captain Ross. It was listened to with great interest by the members; and the scientific results obtained led to several congratulatory observations.—M. Dumas read a communication from M. Mallet, professor of chemistry at St. Quentin, on a new and improved method of purifying coal and other gas for economical purposes. One of the inconveniences of coal-gas arose from the pyrites or sulphate of iron, which abounded in all coal-formations, and which communicated to the gas a mixture of sulphuretted hydrogen gas of a deleterious nature, which was difficult to be entirely got rid of, and which, when combined with ammonia, another substance frequently found in coal, became very dangerous.

pressed, and deserved a *verbatim* report, as one of the finest specimens of oratory in the English language.—*Ed. Lit. Gaz.*



When the hydrosulphate of ammonia came to the gas-burner in contact with the flame, the sulphur became converted into sulphuric acid, which was not only pernicious to the persons who breathed it, but also destructive of articles of furniture, of colours, &c. The common method was to purify gas with a solution of lime; but this formed a substance which could not be profitably employed in commerce; and this made the operation so expensive, that fresh lime was not used so frequently as it ought. Hence the purification of the gas was seldom complete. M. Mallet had determined that common gas contained both the hydrosulphate and the hydrocyanate of ammonia; and also that in the purification by lime, the acids only became fixed, while the ammonia was left free. He had therefore commenced by fixing the ammonia by means of a salt of iron or of manganese; and the portion of sulphuretted hydrogen which escaped from the first condensation was afterwards easily retained by means of a solution of lime. The ammoniacal salt formed by the first part of this process became a saleable product; and the quantity of lime required for the second became much reduced, since most of the sulphur was retained by the iron or the manganese. The gas thus purified had a much less offensive smell, and was much less unwholesome, than that prepared in the usual way. This memoir was referred to the Monthyon-prize committee.—M. Lassaigne sent a paper to the Academy, on a method of preparing what he termed artificial flour, to supersede wheaten flour, for bread, &c. It was composed as follows: dried gluten of wheat, 17.5 grains; fecula of potatoes, 75 gr.; sugar, 3.7 gr.; gum, 3.7 gr.: total, 99.9 grains. He found that 100 parts of this substance, when leavened and salted, produced 115.3 parts of bread. This bread was similar to rye-bread (no great improvement upon the use of wheaten flour).—An elaborate paper, by M. Milne Edwards, on the acephalous mollusca of the coasts of France, was read to the Academy; and was followed by one from M. de Bouys, on the solubility of hypurates and hypuric acid in water, the application of which discovery to the cure of gout (the concretionary substances of which malady are formed of uric acid and urates), had been attended with some success in the Hôpital de la Charité.—Dr. Donné communicated to the Academy, that he had injected concentrated gelatine into the veins of dogs without producing any injury.—Messrs. Danger and Flandin laid on the table their elaborate *Treatise on Arsenic*, and the means of detecting its existence in medico-legal cases.

*Sitting of August 23.*—M. Biot terminated the reading of his long and learned memoir on the polarisation of light.—Messrs Bardin and Dubois laid on the table an interesting work, just published by them, on the *Academical History of Animal Magnetism*, exposing the humbug (*exposez le mot*) of the whole thing, from its first starting to the present day.

We learn from Rome, that the Chevalier Visconti has been appointed professor of archaeology in the Academy of France in that capital, in the room of the late Professor Nibby.

#### FINE ARTS.

SINCE our last No. appeared, we have attended two public meetings, the objects of which were to elucidate the proceedings of an association and an institution, both directed, though in different ways, to the advancement of the fine arts, and the general improvement of popular

taste and feeling in regard to them, as well as to their useful application in the manufactures of the country.

#### 1. Society for Obtaining Free Admission to National Monuments and Public Edifices.

The meeting took place at the Thatched-House Tavern; Mr. Ewart, M.P., in the chair. Dr. Bowring and Mr. Rennie, M.P.s. Mr. Auldjo, Mr. Donaldson (architect), Mr. Clint, and others interested in the progress of this association also attended; and the annual minutes and report of the committee were read by Mr. George Foggo, the honorary secretary. From the latter it appeared, that the exertions of the society were gradually producing the effect contemplated in its formation, and extending the free admission of the people to various public places throughout the country. Among these were mentioned the *Admirals' room* and *Wolsey's hall* at Hampton Court, visited by 116,000 persons within twelve months; the *Jewel-room* in the *Tower*, (a more spacious apartment being in preparation), and the *Tower* generally, to which the influx from May 1839 to May 1840 amounted to 80,000, at 6d. each; whereas, in the preceding year, the number at 1s. did not reach 40,000; and in 1837 the warden's fees at 2s. attached to only 10,200 persons. Thus at 6d. the amount of money received by the authorities was nearly doubled. At the *British Museum* the admissions have not been so numerous as two years ago; but in a few months the completion of the improvements will open a wider field for public amusement and instruction. At the *National Gallery*, the number of visitors evinces increasing taste; in 1839 it was 397,000. The *Museum of the East India House* was visited the first year of free exhibition by 15,000 persons, and during the twelve months just expired by 9,800. The want of a catalogue impedes public interest. That of *Sir John Soane in Lincoln's Inn Fields* has been seen by 7,837 in the last season. The admissions to the *Edinburgh College of Surgeons' Museum* was in 1839, on ordinary days, 9,219; and on the day of the queen's coronation, 25,000. Last year the visitors on the usual public days amounted to 11,000;—so completely has the liberal exhibition of that collection removed a deep-rooted prejudice. In addition to the above, and other establishments previously open to the public, government has cancelled the practice of taking fees for the exhibition of the *Regalia of Scotland*; and in the fourteen months that they have been shewn without charge, 36,900 persons have seen them. Several *Private Institutions* have also liberally opened their doors to the public at the society's suggestion, beyond those already mentioned; viz. the *Lincolnian Natural-History Museum*, weekly; that of *Manchester*; the *Liverpool Royal Institution* and *Botanical Garden*; and the *Norwich Museum*. In all these places the conduct of the crowds had been most orderly and gratifying, evincing the utmost propriety of behaviour and intelligent curiosity, so as "to demonstrate that nothing is wanting but the opportunities of forming tastes, and a generous and respectful spirit of sympathy manifested toward them, to take away from the English people that character of rudeness and insensibility to the beauties of nature and art which has so long been a national opprobrium." (*Report for Liverpool*.)

The report of the select committee of the House of Commons on the present state of national monuments and works of art in Westminster Abbey, St. Paul's Cathedral, and other public edifices (16th June 1841), copies of which were on the table, corroborated all opinions favourable to affording facilities to the public

for their inspection, as a means of moral and intellectual improvement for the people.

A conversation ensued, in which several interesting facts were stated, and suggestions thrown out in furtherance of the desired extension, and the best methods for rendering places already opened more practically beneficial in furnishing the information to be derived from them. Thus, an improvement of catalogues at the lowest possible price—the remission of duties on materials employed in building museums of science or art—the descriptive labelling of their contents—the further reduction of fees, wherever practicable consistently with the protection and safe keeping of the valuable articles in any repository—the grant of funds for the preservation and restoration of monuments—(in France, government grants 15,000*l.* per annum)—were all recommended, and referred to the committee for more mature consideration.

Of that committee Mr. Auldjo was elected a member, and also Mr. Donaldson, who, on the retirement of Mr. Rennie from the office, was solicited to become the society's treasurer. The meeting then adjourned for a fortnight.

#### 2. School of Design.

THE fourth annual distribution of the prizes took place in Somerset House, on Monday afternoon; H. R. H. Prince Albert presiding. There was a goodly attendance of distinguished persons and patrons of art; and the apartment (the quadrang great room of the R. A. exhibitions) was filled with artists, amateurs, students, and their friends and relatives.

The business commenced by Mr. Dyce, the director, reading a statement of the progress of the institution, in which considerable departures from its original form and mode of acting had taken place. At first, prizes were given for the best designs in certain branches of industry dependent on taste; but it was found that elementary skill was wanting to complete the usefulness of the school as a national establishment. As the pupils had advanced in this line of education, a new selection of subjects for competition had naturally arisen; and it had been considered desirable to stimulate the talents of those who were no longer beginners, by offering rewards, either for specimens of original design of the simpler sorts, or for the kind of work which, not ranking as original design, constituted the step immediately preparatory to it. The paper concluded with the following descriptive particulars. "Of the nine prizes now to be awarded, four are of this description:—one being for the best painting of flowers or fruit from nature; one for the best model in plaster from flowers or leaves; and the other two for original designs in outline merely. Of the remaining five prizes, two are intended to encourage the right preparation of patterns for branches of industry, which it must always be the business of the school more or less to attend to—namely calico-printing and paper-staining. Two for decorative design have been selected with reference to the growing public taste for a revival of the ancient arts of glass-staining and the painting of arabesques; and one for specimens of lithography, to reward the zeal, assiduity, and talent of the pupils who are preparing themselves to assist in the execution of the elementary drawing-book for schools, which is now about to be published under the sanction of the council. It only remains to be added, as one of the most favourable symptoms of the progress of the school, that the number of competitors is much greater this year than on the former occasion;

and that if the instances of remarkable excellence are less numerous, it is due to the fact, that the prizes have been intended, for the most part, rather to elicit the rising talent of the younger students than to afford scope for the skill of those who are more advanced; and consequently that the majority of the specimens are really the production of beginners.

Mr. Cockerell, R.A., next addressed the meeting, and highly commended the abilities and diligence of the successful competitors, and also bore testimony to the marked general improvement and favourable prospects of the school.

The prizes were then distributed in the following order: Mr. Labouchere, who sat on the right of the chair, handing them to Prince Albert, who with a condescending air delivered them to the respective students, as they were called forward to the platform:—

1. To Mr. G. F. Lambart, for the best lithograph from nature. Given by the Right Hon. the President of the Board of Trade. 5*l*. 5*s*.
2. To Mr. J. Patterson, for the best painting of a group of flowers from nature. Given by the Right Hon. the President of the Board of Trade. 5*l*. 5*s*.
3. To Master C. King, for the best design for a salver. Given by Mr. J. G. Bridge. 3*l*. 3*s*.
4. To Master G. Dyer, for the best design for a silver standard. Given by Mr. J. G. Bridge. 2*l*. 2*s*.
5. To Mr. O. Hudson, for a large design for painted glass. Offered by Mr. Alderman Copeland, M.P. 5*l*. 5*s*.
6. To Mr. G. Thompson, for a specimen of arabesque painting. Given by Mr. H. T. Hope. 5*l*. 5*s*.
7. To Mr. J. Evans, for the best design for mousseline de laine. Given by Mr. J. Thomson. 5*l*. 5*s*.
8. To Mr. W. C. Wild, for the best design of a drawing-room paper. Given by Mr. J. Thomson. 3*l*. 3*s*.
9. To Mr. H. Durrant, for the best plaster model of leaves and flowers from nature. Given by the Council. 3*l*. 3*s*.

Rewards of books for good conduct, regularity of attendance, and general attention to study, were then presented to Masters Barton, Stewart, O'Neil, Arnold, Gibaud, Beckwith, Findon, Desmure, Haswell, Taylor, Tiffin, W. West, Walhams, and Wright.

Mr. Labouchere proposed the grateful thanks of the meeting to the Prince (whose name was received with acclamations); and dwelt upon the prospective importance of the institution as regarded the science and manufactures of Great Britain. Sir R. H. Inglis seconded the vote in an animated address, in which he happily complimented Prince Albert upon his public appearance, on three occasions, among a people who had welcomed him with more than paternal love,—1st, at the meeting to promote the civilisation of Africa; 2d, at that for the education of sons of the clergy, and providing for their widows and orphans; and now, 3d, where he took his place as the friend, protector, and patron of the fine arts.

It. R. H. having looked at some of the prize-specimens, thanked the assembly, and expressed his trust that the prosperity of the institution would continue to increase.

The meeting then dispersed.

## BIOGRAPHY.

### THEODORE HOOK.

We have lost a social companion and friend of more than five and thirty years; a brilliant light of talent, and wit, and humour, is extinguished, by the early death of Theodore E. Hook, which (hardly is it possible to think of) anguished melancholy in unison with him—but he is no more.) melancholy event took place at his house in Fulham on the night of Tuesday last. Mr. Hook had been severely indisposed for several weeks, and at length sank under a complication of disease, which no remedies could stay. He was born the 22d September 1788.

It is too early a time to speak of this singularly gifted individual except in the spontaneous and general terms of that sorrow which flows from the thought, that we shall never listen to his voice again; never hear those sparkling sallies which used to set the table in a roar; never dwell with unmingled admiration on those extemporaneous effusions, in which he never had an equal, and which were the delight and wonder of all who knew him; never witness that unabating spirit and unflagging mirth, which made him the soul and centre of the convivial circle; never harken him on to new efforts and additional triumphs, after he had achieved more than would have been fame to twenty acknowledged wits; never look upon that bright, dark, flashing eye, illuminating with mind and the glance of the forthcoming lightning; never feel the force of that manly sense, acute observation, and accumulated intelligence, which rendered him as instructive when gravity prevailed, as he was unapproachable when festivity ruled the hour. Alas, dear Hook! there is now a void indeed where you so gloriously shone.

From his very early youth Mr. Hook was distinguished by precocious endowments, and began the world of London as a mere boy. Even then he was the life of gay society; though not overflowing with that exuberance of fancy which marked his riper years. His dramas were successful, his literary productions soon became popular; and from that time to this, his innumerable writings in various departments have had very great effects upon the public, and established him high among the principal authors of the age. Poetry, politics, fiction, the stage, polite literature in general, and biography, have all been adorned by his pen; and where the object was to impress the country with any opinions, fortunate was the side which enlisted his sympathies and support.

His skill and readiness in music was almost equal to his powers in extempore poetical composition. He could invent and execute an opera on the spur of the moment; as he could conceive and sing half a dozen humorous and pointed songs in an afternoon, upon any subjects proposed to him. His jest was always ready, and his repartee so prompt and so surely a hit, slight if playful, but heavy if provoked, that all around him soon became aware that his fires were either innocuously glancing or scorching, as the circumstance inflamed and called them forth.

But, whatever he was in his humour, he was warm in his friendships, liberal and generous in his character, charitable and humane in his nature. In many points he had no rival; and active and ardent as his path has been for many years, we believe he did not make a personal enemy; and sure we are that his memory will be hallowed by the esteem due to genius, and by the mournful regrets of those who were his associates in scenes, the indescribable charms of which, all elicited by him, they never can forget.

## THE DRAMA.

Her Majesty's Theatre on Saturday closed its season with a selection of operatic scenes. Public circumstances, such as the dissolution of Parliament and the removal of the Court, have been unfavourable to the Opera; but we are inclined to think that with the profits of the *Rachemania* the whole cannot have been unproductive. Next year, we believe, there is

to be a new government; but Laporte, with his experience, still vicergerent over it.

*Drury Lane*.—A series of "tableaux vivans by living artists," as the bills have it, has been introduced into the amusements; and to say the least of this kind of exhibition, it is very much out of place: the audience seemed divided as to its merits; and we fear it is of a class calculated to deter many respectable families from visiting the concerts.

*English Opera*.—On Wednesday the Operatic Society were in possession of this stage, and performed the opera of *Figaro*, with English libretto, very creditably. The orchestra was extremely well conducted by Mr. Willy, and the music generally given with pleasing effect. The farce of the *Lottery* was also played with some spirit.

On Thursday the Society of Dramatic Authors brought out their first production, *Martinuzzi*, a tragedy, in which, mingled with passages of some merit and dramatic effect, are others so nearly approaching the absurd, that it cannot be called a successful attempt. The inclination to laugh once engendered in an audience must be fatal to a piece intended to have the contrary effect. Some of Mr. Elton's gesticulations, unfortunately, gave rise to a feeling of this kind; and the author's somewhat ludicrous metaphors were watched for, received, and applied in a way far from flattering. It is but fair, however, to say, the interest of the plot, and many portions of the dialogue, commanded and deserved attention. Mrs. Warner's part was excellently acted; and Mr. Phelps (in a close imitation or following of Macready) made the character of *Martinuzzi* a pleasing and partially successful performance. Miss Maywood was not fortunate in her rôle, her studied action and mannered recital marred the better portions, and gave increased force to the equivocal. The introduction of vocal music is not an improvement to a tragedy, however pleasing it may be in itself; and the audience, forgetting the legal necessity for it, testified this opinion in a decided manner. A farce called *The Cloak and the Bonnet* succeeded *Martinuzzi*. Peace to its manes!

## VARIETIES.

*Monument to Sir D. Wilkie*.—The meeting of to-day, with Sir R. Peel in the chair, possesses peculiar attractions, from the state of public affairs. It is curious, either for contrast or comparison, to see politics and the fine arts, the business of life and of death, brought thus so nearly into juxtaposition.

*Breakwater at Brighton*.—It will not surprise the readers of our report of the British Association, that particular subjects should provoke so much ardent discussion, when they reflect that such subjects deeply involve the interests and prospects of the combatants. Thus, at one time the hot and cold blasts for iron-smelting; at another the forms of railway-carriages; and again the shapes of paddles; the construction of roads; and, in short, all the nothing-like-leather schemes, inventions, and discoveries, which are brought forward, impeached and defended, with so much vivacity. We are led to this point by observing, that at a Brighton meeting this week, the plan of a breakwater for that place has been proposed, and resolutions in its favour adopted. Need we wonder, then, at the sharp Plymouth debates in the Mechanical Section, on the comparative merits of different kinds of breakwaters!

*Pictures*.—The collection of pictures sold by Mr. Rainy this week, at his spacious rooms in

Regent Street, included some very fine specimens. Among them was "A View on a Dutch Canal," by A. Cuyp, sold for 588*l.*; and a Hobima, "Woody Landscape," for 997*l.* 10*s.*; both bought by M. Nieuwenhuys. A small Rusydal, 153*l.* 5*s.*, was purchased by Mr. Edwards, a dealer.

**Wonderful Travelling.**—Our inquiries into the exact truth of the statement under this title in our last Number have not been attended with any certain result. On one hand we are assured that the electro-magnetic traveller (Mr. Chauner, or some such name, in the Public Drawing Office, Bank) has really drawn himself by electro-magnetism from St. Alban's at the rate specified. By another informant we are told that he has never succeeded to the extent alleged; never carried any voltaic battery with him, but only caused motion by some multiplying apparatus acting on the axle or wheels. Whichever way it may be, we are not without expectation that some great tractive power will soon be applied through this medium; to which, of late, the attention of intelligent minds has been so much directed. Mr. C. was, we hear, a pupil of Dr. Lardner: his explanations to the deputy-governor of the Bank, and to the directors of the Adelaide Gallery,—both ready to come forward, if necessary,—had not led to the grant of any funds for maturing the invention.

H. B. is working double tides, and, if possible, with double dexterity. Six new caricatures are before us, completing his number to seven hundred, and one over,—an exploit unexampled in the most prolific annals of caricature. Lord John, as a groom, trying to catch John Bull (only Bull is a prancing horse for the nonce) with a sieve of corn, or chaff, is exceedingly clever in execution, though simple in idea and application. The same noble lord, as another Curtius, leaping into the corn-law gulf, the premier supporting a weeping queen, is also a clever comment on the same question and state of things. "Misery makes a man acquainted with strange bedfellows," is yet more humorous: Alderman Wood and Lord John are bedfellows, and we suppose the bed is a city-of-London affair. Sir Matthew is glorious; and the different expression of the two countenances perfect. "Take care of your pockets!" Peel in danger of being priggish by Lord John and Lord Melbourne, two of the swell-mob. Never was gentlemanly figure more metamorphosed than that of the latter, and yet the likeness admirably preserved. No. 700 is a design from the antique—the destruction of the Niobe family, not quite finished; and is a tragic assemblage of ex-M.P.s who have not been returned at the late elections. O'Connell is the frantic mother. Last of all we have the contrast, in which John Bull compliments Lord Morpeth for his conduct under defeat, and at the expense of another noble rejected—Lord Howick.

**Thunder-Storm.**—A terrible thunder-storm passed over Liverpool on Monday night and Tuesday morning, but not without damage; for the electric fluid struck the steeples of St. Michael's and St. Martin's-in-the-Fields churches (three miles apart), and seriously injured them both, so that it appears they must be rebuilt.

**The Morley Clay-Works.**—We would refer to Dr. Buckland's statement respecting these works, as likely to lead to objects of much manufacturing importance, and being of perhaps greater practical local interest than any other topic introduced at the meeting. The

counties are, we believe, rich in materials that only want to be known and brought into use, to enrich them and benefit the country at large.

Yesterday sennight died, in his 80th year, at Biddenden, in Kent, the Rev. Edward Nares, B.D., regius professor of modern history and modern languages, first of Christ Church, and afterwards a fellow of Merton College. He was the son of Judge Nares, and was born March 26th, 1762. He proceeded M.A. July 11th, 1789; B.D. and D.D., March 2d, 1814. In 1805 he was appointed Bampton lecturer. In 1813 he succeeded Dr. Beeke in the professorship. On the 16th of April, 1797, he married Lady Charlotte, the third daughter of George, the fourth Duke of Marlborough, who died Jan. 15th, 1802. He afterwards married Cordelia, the second daughter of Thomas Adams, Esq. In 1798 he was presented to the rectory of Biddenden, by his Grace the Archbishop of Canterbury. Dr. Nares was the author of the following works:—"An Attempt to shew how far the Philosophical Notion of a Plurality of Worlds is consistent or not with the language of Scripture," 8vo, 1802; "Sermons composed for Country Congregations," 8vo, 1803; "A View of the Evidences of Christianity at the close of the pretended Age of Reason," in eight sermons, 8vo, 1805; "A Visitation-Sermon," 4to, 1806; "Remarks on the Version of the New Testament lately published by the Unitarians," 8vo, 1810; "Thinks I to Myself," a novel, 2 vols. 12mo, 1811, which went through several editions; "Sermons preached at the Bampton Lecture," 8vo, 1806; "Discourses on the Three Creeds," 8vo, 1819; several single sermons; and "Memoirs of the Life and Administration of Lord Burghley," 3 vols. 4to.—*Oxford Herald* of the 21st. Dr. Arnold is appointed successor to Dr. Nares.

**Magnetism.**—Dr. Scoresby, of Queen's College, and vicar of Bradford, Yorkshire, has been for some time in the metropolis; and we understand that he has made known to the Royal Institution and the United Service Club his recent important discovery in improving magnetical instruments, by which their power will be raised on an average nearly threefold, besides rendering them almost unchangeable. So highly have his communications been esteemed by the latter distinguished body of officers, that a vote of thanks has been conveyed to Dr. S. from their council, accompanied by a diploma, conferring the distinction of honorary member in that society. During his stay in London, Dr. Scoresby had the honour of an interview with Prince Albert at Buckingham Palace, for the purpose of communicating to his Royal Highness these important discoveries.—*Cambridge Chronicle*.

**Bernhard Romberg**, the celebrated violoncellist, died on the 13th at Hamburg, aged 73.

#### LITERARY NOVELTIES.

We are glad to see a second edition (by subscription) announced of Dibdin's "Sea-Songs": the first edition of 3000 having been "used up," and, we trust, produced a corresponding benefit to his successors.

#### LIST OF NEW BOOKS.

An Elementary History of Greece, by T. Keightley, 18mo, 3s. 6d.—A Treatise on the Direct Solution of Cubic Equations, by W. Brownlow, A.M., 12mo, 4*s.* 6d.—Grounds and Objects of the Budget, reprinted from No. 118 of the "Edinburgh Review," 8vo, 2*s.*—Sir H. Cavendish's Debates in the House of Commons, from 1768 to 1774, edited by J. Wright, Part IV., royal 8vo, 6*s.*; Vol. I. 2*s.*—Essays, by W. Emerson, of Massachusetts, with Preface by T. Carlyle, fcp. 10*s.*—Sir W. Scott's Tales of a Grandfather, 1 vol. 8vo, 12*s.*—Turner's Elements of Chemistry, Part III. No. 3, 8vo, 4*s.*—Bishop Pricedaux's Doctrine of Prayer, edited by Rev. Dr. Cornish, 18mo, 4*s.*—Gideon, the Mighty Man of Valour, 3d edit, fcp. 7*s.*—Poll-Book of the Westminster

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#### METEOROLOGICAL JOURNAL, 1841.

August.	Thermometer.	Barometer.
Thursday . . . 19	From 72 to 72	30.14 to 30.03
Friday . . . 20	53 . . . 74	29.95 . . . 29.79
Saturday . . . 21	52 . . . 70	29.62 . . . 29.70
Sunday . . . 22	49 . . . 65	29.84 . . . 29.96
Monday . . . 23	52 . . . 64.5	29.78 . . . 29.85
Tuesday . . . 24	46 . . . 63	29.96 . . . 30.01
Wednesday . . . 25	46 . . . 63	30.04 . . . 30.02

Prevailing wind, S.W.

On the 19th and following day, clear; the 21st, morning overcast, otherwise clear; the 22d, morning cloudy, with rain, afternoon clear, evening overcast; the 23d, morning, cloudy, with heavy rain, otherwise generally clear; the 24th, generally clear, a shower of rain between twelve and one, P.M.; the 25th, generally cloudy, small rain falling all the morning.

Rain fallen, .585 of an inch.

Edmonton. CHARLES HENRY ADAMS.  
Latitude, 51° 37' 32" north.  
Longitude, 3 51 west of Greenwich.

#### TO CORRESPONDENTS.

NOTE to Mr. Pricedaux's paper, p. 545, omitted in our last.—The rapid wasting away of ship's copper on the African coast is attributable to the vast accumulations of sulphuretted hydrogen over an immense area, produced by the action and reaction of the sulphates in solution in sea-water on the vegetable matter brought down by the tropical rivers. A similar explanation may be given of the like occurrence in the Gulf-stream, Medway, &c.—*Ed. L. G.*

H. J. B.—we will find a letter at the *Literary Gazette* Office.

Not having seen the Rev. Baptist Noel's pamphlet on the Corn-Laws, we shall merely notice, that the answer to it, "A Counter-Plan for the Poor" (Olivier, p. 20) appears to us to be at once temperate and forcible, putting many points on the other side in a strong light.

We will notice Messrs. Young and Delambre's new printing apparatus in our next.

#### ADVERTISEMENTS.

##### SALES BY AUCTION.

##### ANTIQUARY GEMS.

**MESSRS. FOSTER AND SON** are favoured with directions from the Assignees of Messrs. Wright and Co., Bankers, to SELL, by AUCTION, at the gallery, 54 Pall Mall, on Thursday, 10th September, at one o'clock, very precious Collection of ONE HUNDRED AND EIGHTY-SEVEN ANTIQUARY GEMS, formerly belonging to a distinguished Greek, and deposited in our Museum. The Gems are of various kinds, and of great value. Many of these gems are of excessive rarity, and cannot fail to interest every lover of this delightful branch of the Arts.—On View Three days prior. Catalogues to be had from the Assignees of Messrs. F. and S. Foster, 14 Green Street, near Fawcett, Hamilton, and Fawcett, Henrietta Street; of E. Edwards, 44, Oxford Assignee; and of Messrs. Foster, 14 Green Street, and 34 Pall Mall.

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	Without Profits.	With Profits.	Without Profits.	With Profits.	Without Profits.	With Profits.
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25	1 4 4	2 9 3	1 4 4	2 9 3	1 4 4	2 9 3
30	1 5 4	3 10 1	1 5 4	3 10 1	1 5 4	3 10 1
35	1 6 4	4 13 6	1 6 4	4 13 6	1 6 4	4 13 6
40	1 7 4	5 8 4	1 7 4	5 8 4	1 7 4	5 8 4

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Cash	394 11 0
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Meeting of the Admirers of the late Sir DAVID WILKIE will be held THIS DAY, at the Thatched House Tavern, St. James's Street, when

The Right Hon. Sir ROBERT PEEL, Bart., M.P. Will take the Chair at One for Two o'clock precisely.

ALLAN CUNNINGHAM, Hon. Sec.

7, Royal Belgrave Place, St. James's, 1881.

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